

# The Commercial Car Journal

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## Testimony at I. C. C. Hearings Favors BUS *but not* TRUCK Regulation

**A**LTHOUGH it is too early to reach definite conclusions as to the final effect of the hearings that are being held throughout the country by the Interstate Commerce Commission, it is evident that if the first meeting may be taken as a criterion, a great deal of interest is being aroused by these meetings, and much vital data will be forthcoming concerning the various aspects of motor vehicle transportation.

From the testimony given at Chicago it is evident that truck operators do not want Federal control; bus operators would not be averse from reasonable regulation, and some railroads agree that the private automobile is more responsible for their loss of passenger business than the motor bus.

This is the gist of the evidence presented to the interstate commerce commission at the initial hearing held in Chicago on July 27th, 28th and 29th.

### Want Facts Not Arguments

In opening the hearings officially, Commissioner John J. Esch, made it plain that the only object of the commission in the present hearings was to obtain facts and not open arguments. He indicated that the commission recognizes that it is without authority to regulate motor transportation until such time as specific legislation is enacted by Congress. The commissioner stated that briefs could be filed with the commission, and that it would be appreciated if exhibits be filed instead of long verbal testimony.

*Varied opinions and facts presented at Chicago hearing seem favorable to regulation of the bus—Minnesota questions the right of the I. C. C. to hold hearings and asks that entire proceedings be dismissed.*

By Albert G. Metz

Although the commission under Commissioners Esch and Aitchison and Examiner Flynn can only legally call upon rail carriers for evidence the major portion of the three days at Chicago, was devoted to the presentation of facts and data by bus and truck representatives. These witnesses were appointed by the N.A.C.C. Committee which consists of A. J. Brosseau of Mack Trucks, Inc., chairman; Windsor T. White, The White Co.; J. A. Ritchie, Yellow Truck & Coach Manufacturing Co.; Alfred H. Swayne, General Motors, and Alexander Legge, International Harvester Co. of America.

After the opening of the inquiry by Commissioner Esch, who pointed out that

the automotive operating and manufacturing fields represented a total valuation equal to that of all the rail carriers, and was represented in the operating end by 75,000 buses, 3000 of which are engaged in interstate commerce, over 500,000 trucks and more than 15,500,000 automobiles,

representatives of eleven railroad and traction lines presented evidence.

Several of these witnesses stated that in attempts to eliminate financially irresponsible trucking operations injunctions had been obtained but the truck operators had discovered means of circumventing the injunctions and continuing competition with the railroads. They were therefore unanimous in their opinion that there must eventually be some form of federal or state control of such traffic.

### Private Cars Cut Railway Revenue

Figures on the inroads made by private automobiles and buses into railroad passenger traffic were presented by G. J. Charlton of the Chicago & Alton road.

At Normal, Illinois, he said, bus competition had reduced the number of

passenger tickets sold from 1700 to 837 between 1921 and 1924. At Towanda the volume fell from 700 to 182. These figures are for the month of June in both cases. In another case the tickets were reduced by half and at the present time they are losing each month about 15 per cent of the 19.1 volume of business.

It was S. H. Eustis of the Chicago, Burlington & Quincy road, however, who empha-



Motor Truck and Bus Operators and representatives of Motor Truck Associations and railroads attending first hearing at Chicago

sized the fact that while motor bus competition was felt it was the private automobile that was largely responsible for the big decline in the passenger business. He thought the competition would increase as more highways were constructed, and said they were outlining plans to lower operating costs and eliminate unprofitable services.

In reporting a reduction in passenger traffic of from 567,000 in 1921 to 209,000 in 1925, C. L. Henry of the Indiana & Cincinnati Traction Co., admitted that the fair volume of freight business done by this road was made possible by the motor trucking operators at his terminals.

#### Flexibility of Bus Service

On the second day of the hearing the evidence demonstrated that flexibility of service and not rate cutting is the greatest factor in the growth of motor bus and truck transportation.

Discussing the turnover in bus and truck operators, Judge Robert I. Marsh of Indianapolis asserted that too many ambitious individuals and companies enter the motor transportation business with little or no knowledge of its fundamentals; too many were financially irresponsible when they began business and with the first accident or property losses were forced out of business.

As regards state regulation this witness declared that under present conditions it is impossible to define just how far the state could go, instancing the case of a farmer asking his neighbor to haul his produce to town and paying for the service.

That the motor truck and bus industry is in the same condition as were the railroads some years ago was the opinion of H. E. Barber of the Egyptian Transportation System. Then there were too many railroads, especially short spurs, that were operated at a loss. He thought many of the short line railroads and financially irresponsible bus and truck operators should quit business.

Representing 500 truck operators, J. D. Landes, of the Ohio Truck Owners Association, averred that state control in Ohio was a miserable failure chiefly because of lack of enforcement of the laws. He pointed out that Ohio truck operators were being persecuted when crossing into Indiana, and the Ohio Public Service body could not control Indiana operators who were engaged in unfair competition with the Ohio operators.

#### Poultry Interests Favor Truck

Speaking for live poultry interests, I. V. Edgerton asserted that there is a depreciation of 6 to 10 per cent in shipping live poultry by railroad express, whereas with motor trucks suitably constructed the trip was made in less time and with a depreciation of 1 to 2 per cent. He cited one railroad express loss of 350 pounds of live poultry in a 7000 pound shipment, which, at 35 cents a pound, amounted to \$122.50.

The National Furniture Warehousemen's Association was represented by its Executive Secretary Henry Reimers.

The members of this association number 825 and operate about 5000 motor vans, about 8 per cent of which are operated in interstate removals.

Reimers pointed out that the removal of household and office furniture and fixtures is a business apart from general commodity transport by trucks, and that it lends itself to more distant hauls. The business has been forced to recognize the superiority of motor van service over rail service within economic limitations. Some advantages of motor van intercity service were given as follows:

1. Eliminates packing, delay and cost incidental thereto.
2. Eliminates six handlings, as follows:
  - a. Unloading from van to packing room.
  - b. Loading van for removal to railroad.
  - c. Unloading van at railroad.
  - d. Railroad loading into cars.
  - e. Railroad unloading at destinations.
  - f. Van loading at station.

In addition, goods in rail transit are often transferred enroute.

3. Eliminates possible damage by numerous handlings. When removed by motor van there are only two handlings—loading and unloading. In addition the goods are cared for while in transit by trained employees.
4. Saves time and provides definite delivery time, which is often predetermined to the hour.
5. Settlement of loss and damage claims can often be effected more promptly because there is only one company responsible for the entire haul.

Time and promptness of delivery are the most important factors and often customers are willing to pay a higher price for a haul by motor van as compared with all costs entering into a rail haul because of the uncertainty of rail delivery and consequent saving on hotel and local cartage and packing expenses.

A maximum haul of 350 miles is suggested as the economic limit for furniture removals because then the charges for the van begin to exceed all costs entering into transportation by rail.

The testimony offered at the Chicago hearing reiterated practically all of the well known arguments which have been given time and again by those who are intimately affected by the aggressiveness of the relatively new form of transportation. Most of the witnesses contended that the motor bus supplements the steam and the electric railways, but that regulation is badly needed. On the other hand many railways now operate buses and trucks, so that any regulation which will eventually be forthcoming may require railroads to curtail some of their rail schedules and substitute motor buses.

#### Minnesota Gives Battle

At the hearing in St. Paul, July 30, an entirely different front was put up by the witnesses called, particularly in the

case of the Minnesota Railroad & Warehouse Commission, which made a direct attack on behalf of the State, when Ivan Bowen, a member of that commission, denied the right of the I. C. C. to hold the hearing, questioned the jurisdiction over common carrier truck and buses in the state and asked for dismissal of the entire proceedings.

"The State of Minnesota," declared Mr. Bowen, "objects to the jurisdiction of the Interstate Commerce Commission in the present proceedings on the ground that there are no motor vehicles operating on the public highways within the State of Minnesota, or elsewhere, which are subject to the jurisdiction of the Interstate Commerce Commission."

#### Objects to I. C. C. Jurisdiction

The speaker then asked for a dismissal of the proceedings on the following grounds: "The Commission's order makes it appear that it assumes jurisdiction over all motor bus and motor truck operation, by or in connection, or in competition with common carriers, subject to the Interstate Commerce Act. It also appears by Order No. 18,300 of the Commission, that the Commission intends to make such orders as the facts developed by the investigation may warrant, and for the purpose of making recommendations to Congress.

"This broad and sweeping statement gives little information to those of us interested as to what direction the Interstate Commerce Commission contemplates striking out with a view to extending its powers over the motor carriers. No one, not even itself, had any conception that it had jurisdiction over a carrier by motor vehicle prior to the issuance of the Commission's order of May 21st and which Congress, from whom it receives its authority, had refused to commit to the keeping of the Commission when it refused to pass Senate Bill 1734, an Act to regulate Interstate Commerce by motor vehicle."

Bowen further stated that there is no motor carrier in the state of Minnesota, which is not subject to the jurisdiction of the Minnesota Railway and Warehouse Commission, and that in all the voluminous testimony taken by the Minnesota Commission during hearings, there is no clear evidence which would indicate that the railroads of Minnesota were affected adversely by the operation of public motor carriers when operating in their proper sphere.

#### Railroads Keep Silent

On top of Bowen's attack, the railroads delivered their ultimatum by declaring that they might file briefs later, but for the present they had nothing to say. One representative after another declared they had nothing to say, no witnesses to produce or any statements to make.

Bus operators were then called. The gist of their testimony favored the continuation of present state regulation as conducted by the Minnesota Commission. J. E. Edell, traffic manager of the

(Continued on page 42)



# Is Service Worth the Candle?

*In the Struggle for Maintenance Business Are We Losing New Truck Profits?*

By Paul Webb

WHICH is the more valuable to the dealer today?—the service business on a truck two years old or the sale of a new truck? In other words, does it pay to concentrate on selling new jobs or getting the service work on the old ones?

Maintenance establishment is one of the most important problems before the truck marketing organizations today and the branch manager or dealer must answer this question—"Should we employ a large force of mechanics and try to build up a large volume of business in our shops, or should we confine our efforts to the handling of free service, tuning, inspecting, adjusting and reconditioning of used trucks for resale?"

## Mediocre Service

In the past so many service stations have been content with giving mediocre service at somewhat high prices with the result that the present day organizations are frequently looked upon with suspicion and classed as "highway robbers" on the slightest provocation. I have so often got business away from a competitor because of a customer's animosity toward that truck, salesman, or organization, merely because he had misunderstood the reasons for his repair bill being so high.

Every salesman has at some time or

other heard an operator howl "Why! those—! my truck couldn't have been there over three hours" or "Fifteen dollars for putting in \$2.75 worth of parts—!" Herein is one of the big reasons why an operator will not tell his friends to buy the kind of truck that he is using.

## Free Service Evil

The free service after repair—or fixing up of what the customer calls poor work, may cost any percentage of the profit on the job and sometimes more than the profit. For example if an engine repair is effected and a few days later something else has to be done to that unit the customer is irritated and blames the service department for not preventing something that could not be foreseen. It is unjust but it is human nature.

Rebuilding is probably the most difficult proposition to handle, causing more dissatisfaction and more worry, and is less appreciated by the customer.

Some service departments show profits, but the more they make the more enemies they create for the dealer or branch.

Any truck dealer today who looks over the records of his shop and parts sales income will find a downward curve, not necessarily because he is losing service business, but more probably for the reason that his trucks are better designed and made and therefore do not require the same amount of attention.

## Return Negligible

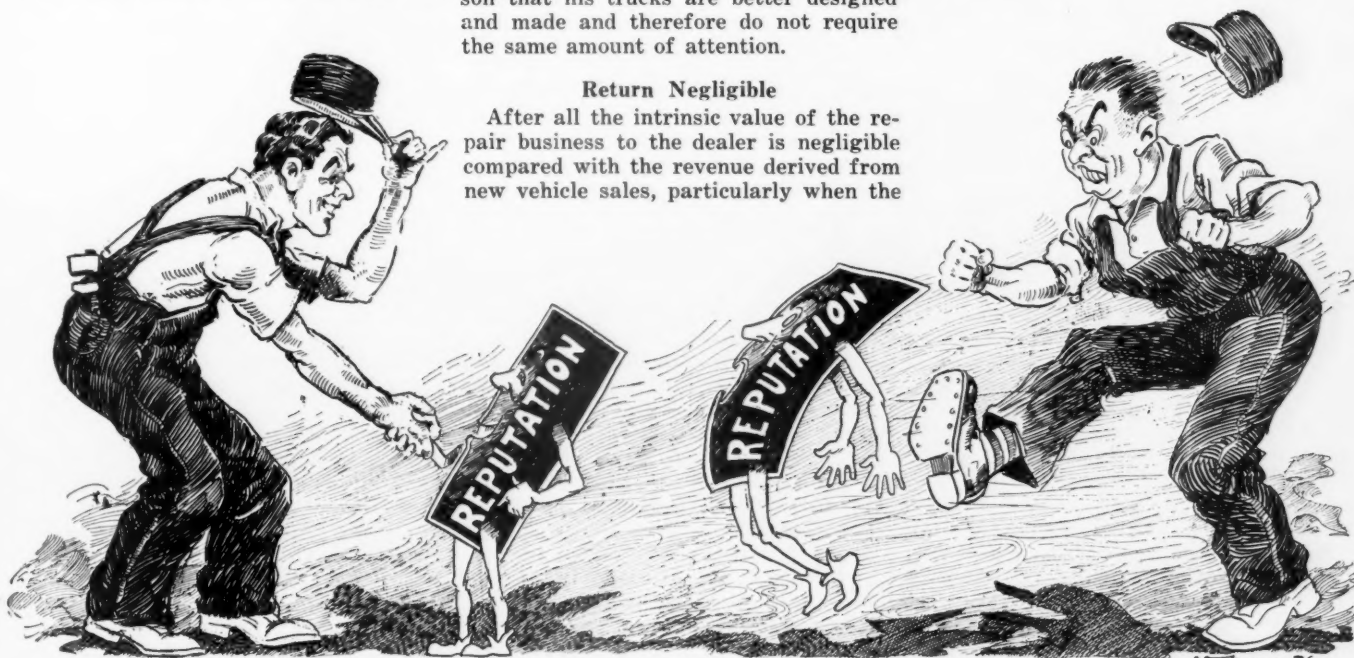
After all the intrinsic value of the repair business to the dealer is negligible compared with the revenue derived from new vehicle sales, particularly when the

investment in personnel and the amount of worry involved are taken into consideration.

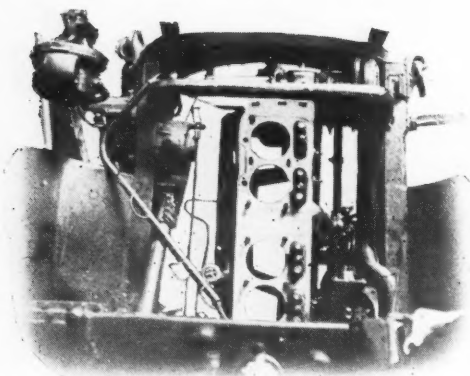
A dealer's good name is largely in the hands of his mechanic. Most truck users prefer service by the dealer or branch to that of any other repairer, but do they appreciate it to the extent that they will accept our job tickets without question? When they do the dealer has certainly made a friend.

The answer to the question, then, "Is service worth the candle" seems to be a distinct negative, and the less the dealer can mix himself up with the repair business the better for him. In going beyond his prime function as a merchandiser of transportation the dealer is opening up for himself additional sources of worry and dissatisfaction that it takes a lot of sales to counterbalance. Beyond that it is a question of degree, dependent on the individual organization. What do other dealers think?

The Harrison Radiator Corporation, which 15 years ago started business in a small way at Lockport, N. Y., has passed the 5,000,000 production mark. In the first year of its existence the firm produced 240 radiators and employed 18 men. Today it employs over 1500 men and is Lockport's largest industry.



It is the power of the mechanic to make or break your name



Disassembly for Top Overhaul. Overhead view showing removal of pistons and oil-pan.

**T**OP overhaul, a term probably originating in aviation circles, denotes repair work which can be accomplished on an engine without removing it from the frame. If the crankshaft and main bearings are in good condition a thorough reconditioning of the engine can be accomplished by a top overhaul.

Several operations are included in a top overhaul and while all of them may not be included in each job still a check is made of each operation and the work done if needed.

The major items included in a top overhaul are:

Cleaning carbon and grinding valves.

Adjustment of connecting rod and main bearings.

Inspection of cylinder bores and pistons and reconditioning or renewal as required.

New rings, usually.

Checking and renewal of piston pins and bushings, if needed cleaning carburetor.

Checking ignition.

Top overhaul is not a substitute for the complete overhaul given to the engine after removal from the chassis. In some cases, however, it is used in place of a complete overhaul, because the vehicle is

required in operation by the owner, its proper place is that of routine maintenance, occurring at intervals between complete overhauls.

The time element is an important one to most owners and they are interested in the number of days the vehicle is out of commission quite as much as the number of hours labor for which they are charged.

Team work, planning and adequate equipment enable service stations to put through top overhauls on a basis which will prove attractive to owners.

#### Team Work

Team work of mechanics is most important. It is really surprising the way two mechanics, accustomed to working together, can put a job through to completion. The multitude of operations are divided between them, seemingly without thought on their part, and with a minimum of interference with each other's work.

For the quicker completion of the job one and sometimes two other mechanics do a part of the work while the two mechanics assigned to the job are busy with other parts of the work.

Precision tools for accurate measurement of cylinder bores, pistons, pins, crankshaft, shims and other parts are required. Equipment for refinishing valve faces and seats should be at hand. Facilities for reconditioning the cylinder bores must be available in the shop, or near at hand.

#### Procedure

The job lends itself to a division of work between the mechanics, one working beneath the engine and the other above it. For convenience in explaining the procedure, the mechanic working on top will be designated as "A" and the one working on the floor as "B."

While A is taking the cylinder

head off, B is removing the oil pan. A portable work bench placed on one side of the vehicle will save time for both men.

If the engine is of the overhead valve type the carbon and valve job may be turned over to a third mechanic and he in turn is assisted by a machinist who refaces the valves and reams or grinds the valve seats.

#### Inspect for Cracks

With the oil pan off, B takes the nuts off all connecting rod bolts and the piston and rod assemblies are taken out and inspected. Bearings are examined for cracks and for fit in rod or cap. Where circular movement of bearings in rods exist it should be corrected. Anchor screws, if used, and condition of shims are checked at this time.

Measurement of the crankshaft is next in order and mikes or a special form of dial gage is used to determine the condition of the shaft. Repair of a shaft which is grooved or badly out of round is not within the scope of a top overhaul.

Either A or B may examine and measure the cylinder bores. Inside mikes, dial gages and a standard piston and ribbon shims may be used for this purpose. In case of wear which justifies reconditioning the bores the job may be done in place in the vehicle or the cylinder block may be removed and the work done in the machine shop.

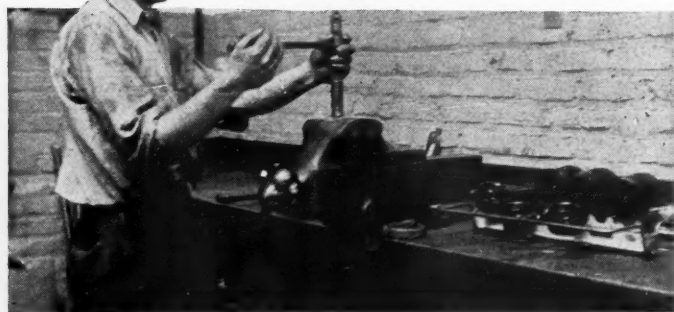
#### Replacement Block

Cylinder blocks with pistons, pins and rings all fitted are kept on hand in many shops to speed up this part of the work. The replacement block is installed in the customer's engine and a charge made which covers the cost of reconditioning the removed block for use in another unit. Removable cylinder sleeves with pistons fitted, accomplish the same result where this type of construction is used.

In case the condition of cylinders and pistons is such that they will give satisfactory service until the next top overhaul, piston pins and rings are next carefully checked. If main bearings are to be adjusted the piston pin job is done by A while B is working on the mains.

Fitting of piston pins was covered by an article "What to do and not to do in fitting piston pins" on page 9 of June issue of Commercial Car Journal.

Reaming the small ends of rods in this manner requires skill and care. This method, however, is generally practiced. Note the piston rack on the bench. It facilitates handling.





# a Top Overhaul?

## *Discussion of Procedure for Securing Efficiency and Dispatch When Tackling a Top Overhaul Operation*

While the connecting rods are disconnected from the pistons B adjusts the lower connecting rod bearings to the crankshaft. An arbor with stepped surfaces turned down to 1, 2 and 3 thousandths oversize and undersize and also standard size, will help speed up this part of the work. By measuring the crankshaft with a mike B can tell which arbor surface to use and can make an approximate fit of the connecting rod bearing to the arbor and save himself a lot of work on his back beneath the truck or bus.

### Final Rod Fitting

Final fitting of the connecting rods is done on the shaft by swinging the rod beneath the shaft.

Fit of cap and rod should be checked during the rod bearing adjustment. In case the cap has been filed at any time, it may be that the surface is not true. The edge of the bearing, if removable should be slightly higher than the surface of the cap to insure it being secure when the bolts are tightened. It may be necessary to file the cap, in some cases, to bring the bearing edge above the cap, or rod surface.

As soon as B has finished the connecting rod adjustment he turns them over to A who fits them to the piston pins and assembles pistons, pins and rods. Pistons are placed in cylinders by both men and connecting rod bearing caps put in place and tightened by B while A is replacing the cylinder head. A and B join efforts in putting the oil pan in place and securing it with two or three bolts. B completes the bolting while A is putting manifolds in place.

### Magneto Inspection

Magneto or distributor inspection is included in the top overhaul. In larger shops the units are removed and taken to the part of the shop specializing in electrical work and tested and repairs made as may be found necessary.

Cleaning of the carburetor, thoroughly, inside and out is called for and except for checking of level of gasoline in float chamber little other work will be required, at this time, in this unit.

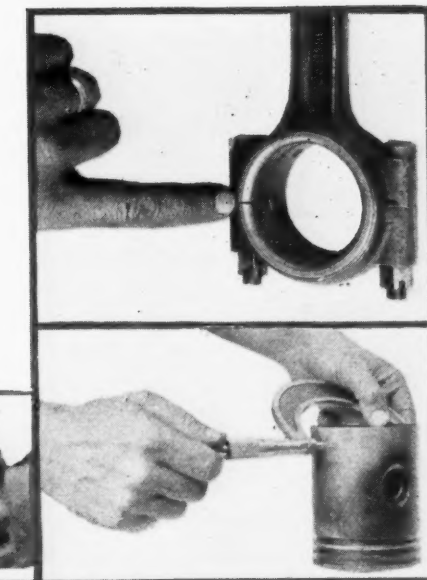
With the assembly complete the putting of oil in the crankcase and water in the radiator are next in order. These apparently simple tasks are sometimes the cause of much delay in completing

the job. Oil should be at hand ready to pour in the crankcase as soon as the mechanic is ready for it. Going to a distant part of the shop and waiting for a stock boy and the completion of the bookkeeping for the charging of the oil on the job card consume a lot of time. The job can be simplified and will be whenever thought is given to the matter.

### Water and Air

Filling the radiator with water has, often, similar handicaps. While water and hose is always conveniently available in the average shop to operate trucks, it is not conveniently available to trucks disassembled and under repair. Investigation of the average repair shop shows that generally no provision is made for a direct water supply at the point of repair. The writer knows of a shop which provides air outlets beside every vise and yet not one radiator hose fitting water outlet in the entire repair section. This is short-sightedness because as a time saving factor a water supply is just as important as air.

Two to three days' time for a complete top overhaul is reported by a number of service stations as their standard. The total number of hours of labor involved ranges from 30 to 60 with a number of shops turning them out in an average of 40 hours.



Upper right: The upper and lower bearing halves must contact snugly when cap is tightened. The bearing edge should be higher than the cap edge. Lower right: Size and concentricity can quickly be determined by use of the mike. Lower left: Showing an extreme case in which the bearing metal is considerably below the cap edge

In selling the top overhaul operation to the customer he should thoroughly explain that this operation will not eliminate all possible noises from the engine. In other words the customer should be shown that this operation does not include removal and reconditioning of tappet guides or tappets, or the replacement of timing gears camshaft and camshaft bearings. For that reason if a job comes into the shop that is pretty well worn, with main bearings very loose, great care must be exercised in miking up the job, to make sure that an oval crankshaft and loose timing gears are not overlooked. Tightening up bearings in that case will not help conditions in the least.

If oil pressure has dropped considerably because of loose bearings the top overhaul may not rectify the trouble. Renewing the connecting rod bearings but leaving the mains with more end play than necessary will not distribute the oil pressure uniformly.

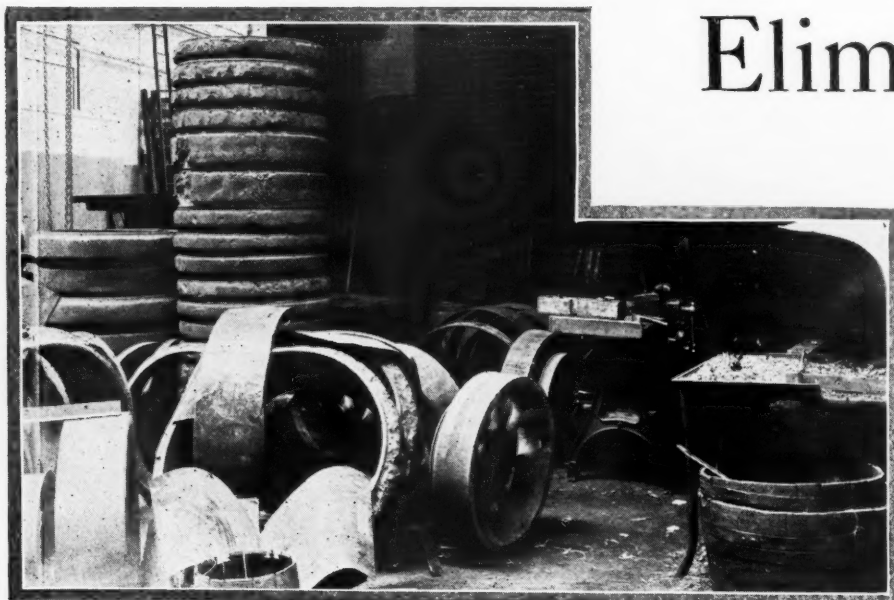
Guessing for fits is entirely eliminated by making the use of the mike a habitual practice. Showing a mechanic miking for correct fit.



# Eliminates Red

1. System and Method
2. Proper Machinery

By C. P.



For 12 years Mr. Carpenter has used a tire press, merchandised truck tires at a profit and rendered tire service to his customers

IS service business worth while?" is the caption of an editorial in the March number of the Commercial Car Journal. It is an editorial every truck dealer should read very slowly and carefully for it points the way for the dealer out of red ink and greater profits in sales. To those who hold that their service department is grief and that satisfactory service cannot be rendered at a profit, the writer offers in rebuttal the testimony of a dealer with 15 years' experience in selling and servicing trucks.

When asked if the service business was worth while, the reply of this dealer was, "Service is the mainstay of my business. When I keep my customers satisfied by keeping their maintenance costs as low as is consistent with quality service, I

can easily obtain their new business and they will recommend me for new business. Even the chronic disgruntled customer, of which all truck dealers have a few, will admit, that I take good care of them in service."

When J. L. Carpenter, Federal distributor for Fairfield and part of New

Haven county, Conn., with headquarters in Bridgeport, started in the truck business in 1912 by handling the same make of truck he now represents, he was sold on the value of service in making sales as he is now. Unlike the average dealer he adopted a policy of selling the business man a transportation unit and servicing it at a reasonable cost. Unlike the average dealer Mr. Carpenter placed his capital in a service station with equipment and parts instead of a fancy showroom with an expensive overhead. To this day this policy is adhered to. There is no showroom nor salesroom. The salesmen have space in the offices but they do their selling in the field. The original office was a tiny room tucked under the ceiling. Just about room for a desk or two and some files.

During the years J. L. Carpenter has been representing the Federal his growth

Below: A section of the machine shop unusually large and well equipped



Above: Where the stock records are maintained

The stock room head is locating the record of a very old part returned by a customer who held part a long time and did not have the sales record—the system won out

has been steady and consistent. After looking over the business records, those monthly and annual statements that tell the story of the truck dealer far more eloquently than any silver tongued orator, Carpenter can be set down as a successful and money making business man. There are a number of things the writer would like to chronicle about the financial aspect but if the figures were presented



# Ink Service *by*

3. *Time Saving Tools*

4. *Experienced Mechanics*

Shattuck

all the automotive salesmen between here and the Pacific Coast would leave Carpenter little time for business.

There are several fundamentals contributing to this success. Trucks are sold on the basis of dependable and economical transportation which means that prestige accrues to the dealer, and the product he represents, when their operating and maintenance costs are held to a reasonable figure. Equally important is the service station so equipped with machinery and time and labor saving tools that experienced and productive mechanics can turn out volume. And the next factor is one too frequently overlooked in service and it is a proper accounting system. Years ago, Carpenter assisted by the manufacturer he represents, installed a cost accounting system by which the story in dollars and cents of each department is read easily and



The original building of J. L. Carpenter's service station affords 70,000 sq. ft., most of which is given over to service

growing. It would be interesting to record what per cent of this gross is net. Well, a good business man wants at least 6 per cent on his investment and on the sum mentioned would be over \$4000. At 10 per cent net it would make a fairly good income. Service is profitable with J. L. Carpenter. And there is another

profit, the good will it builds for repeat orders and for new business.

With the exception of small space given over to the offices all of the 17,000 sq. ft. of floor space is devoted to service. The layout is somewhat unusual and the entrance to the service station misleading. The various buildings are on a street within two blocks of the main street of Bridgeport. There is nothing showy about the first building but the goods are inside. The latest structure is 68 x 100 ft. and of modern design. The first shop is 60 x 62 and the original service station was added to in 1915. This building is now given over to the machine shop, salvage department, battery department and the headquarters of the parts department.

Below: Another section of the parts department and showing economy of space in arrangement

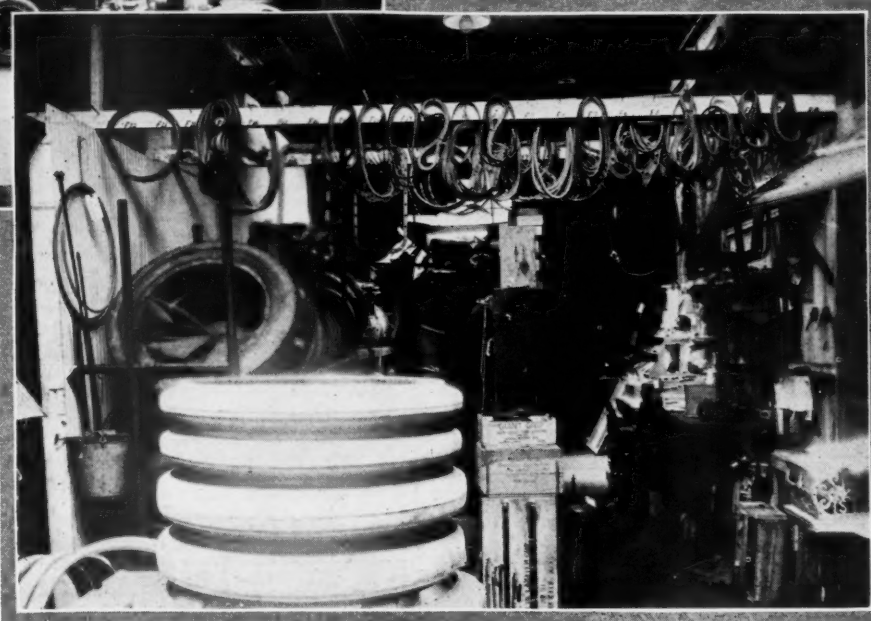


Above: Row of workbenches and pits in the new service building

Note the method of placing the mechanics' drawers and the asbestos mat to prevent chill of cement floor affecting workmen's feet

quickly. The system is not complicated neither does it involve a force of book keepers and clerks. The entire office or clerical department numbers only five including the telephone operator.

The service business is worth while for the gross last year was over \$67,000 and it will be larger this year and succeeding ones for more Federals are being placed in the territory and the fleets are





Battery department and service car. The latter has a special winch and hoist capable of extracting a truck from any ditch, etc.

Due to arrangement the parts are not grouped together but they are compactly arranged and, with the exception of the heavier parts which are stocked in a separate room, all are readily accessible. The parts inventory is about \$40,000. Parts are stocked for old models as well as new. Racks are used for springs, axles, etc. Bins, cabinets, etc., are employed for the smaller units. In one section of the parts room are 10 factory rebuilt motors. This is a form of the unit service. Whenever a customer's power plant requires a rebuild, the factory engine is placed in the chassis and the old removed.

While a perpetual form of inventory card is used it is not standard, it having been worked out. It is a heavy manila card 8 x 5 in. printed on both sides. It gives the location of part, truck model number, name of part and symbol. The usual data as to parts received, etc., is entered. These cards are placed in a double, special cabinet and arranged for easy access. The locations are numbered but the small parts also carry a letter. The very small parts such as pet-cocks, gas line connections, nipples, etc., are in revolving cabinets and a sample is wired on the face of each drawer.

Center: The work order is a doubled sheet with carbon copy. The original is held until work is completed and the pair meeting in office confirms completion of the job

Bottom: Material and parts record is held by the stock or parts room and on it is entered orders from the shop. Parts withdrawals are daily transferred to the inventory card

Top: The parts stock record or inventory form, a perpetual form but differing from the conventional

There are no leaks insofar as the parts department is concerned. Every part, and even lubricants, is charged to some one or paid for. The cash sales are entered on a special register, two carbons being employed. The original goes to the office, first copy to buyer and third is held by the part department.

Parts for service are entered on an 8 x 12 form printed on both sides. As will be noted by the accompanying illustration the work order number is entered and other conventional data. On this form the parts room men enter all material ordered by the service station. From

this form entry is made on the parts stock record card, as is also parts delivered over the parts counter for cash or charge accounts as to customers doing their own work or outside shops. As is obvious the records must be kept up so there will be no delay in making up the bill as the form goes to the office.

The work order or Repair Instructions as it is printed, differs from the conventional. It is a white paper 11 x 5½ in. folded. The service head enters the work or job which has a number. All trucks going through are designated by the shop work order number. If the job is completed the same day, the complete form is sent to the office. If the work extends until the next day or longer, the form is torn in two, the carbon copy going to the office. The office knows the job is not complete. The sending to office of the original is official that the work is completed and the two forms are clipped together and, with the other or parts form completes the picture.

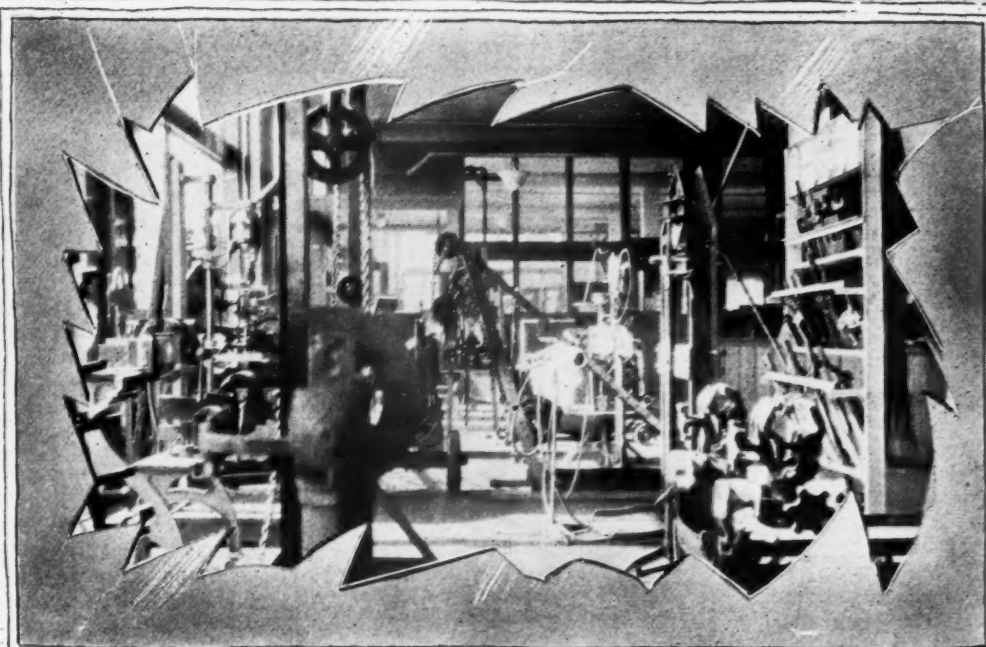
The work order, after being written, is taken into the office to the credit department. If the customer's rating is good it is stamped "Charge," if not satisfactory, the order is stamped "C.O.D." which means cash before the truck is delivered. Parts over the counter to outsiders is handled similarly. The time of the mechanic is by the conventional time card and time clock. These cards bear the workman's number and job number.

The new service building is of truss and cement construction with plenty of metal skylights and windows. The work benches extend opposite the pits and there are 50 ft. of these. They are

(Continued on page 24)

J. L. CARPENTER REPAIR ORDER											
Owner						Date			Order No.		
Car No.				Make and Model							
Promised				Delivery				Invoice No.			
Date	C	Quan.	Size or Part No.	MATERIAL				Total Cost	Unit Sale	Total Sale	
Order No.											
REPAIR INSTRUCTIONS											
Owner						Date					
Car No.				Make and Model							
Promised				Delivery							
Work authorized by.....											
PARTS STOCK RECORD											
MAX..... LOCATION.....						NAME.....					
MIN..... MODELS.....						SYMBOL.....					
ON ORDER				RECEIVED				DELIVERED			
DATE	Order No.	ROUTE	QTY.	DATE	Order No.	ROUTE	QTY.	DATE	Order No.	ROUTE	QTY.
PARTS STOCK RECORD											
LOCATION.....						NAME.....					
MODELS..... MAX..... MIN.....						SYMBOL.....					
ON ORDER				RECEIVED				DELIVERED			
DATE	Order No.	ROUTE	QTY.	DATE	Order No.	ROUTE	QTY.	DATE	Order No.	ROUTE	QTY.





**WHAT DOES YOUR WINDOW SHOW?**

## Display Equipment

*Small buyers of garage equipment and automotive parts are potential big buyers, now or in the future.*

*A silent and effective approach can be secured through the medium of impressionistic display. Stimulate mental activity.*

By C. C. Hermann

**M**ERCHANDISING garage equipment and automotive parts involves problems rarely met in other lines. The shelves are filled with items ranging in price from a few cents up to many dollars. The demand for this shelf stock is large. Customers flow in and out of the sales room in a never-ending stream. The customer may represent a garage in some surrounding town or perhaps a place of business down in the next block. He has every ambition to make his shop an efficient one, for upon the service rendered he builds his business for the future.

### Needs Shop Equipment

In addition to repair parts he requires tools and shop equipment from time to time. He mentally pictures some of the larger equipment, such as a service truck equipped with a hoist, an arbor press, drill press, portable work benches, and other necessary time saving appliances. He keeps an eye on his competitor and notices that as new pieces of equipment

are added to the shop the patronage increases.

This is the type of fellow who is coming into the sales room. Although he is there for the purpose of obtaining, perhaps, an assortment of cotter pins or some small purchase that does not amount to more than fifteen or twenty cents, yet he is the potential market for the *larger pieces of equipment*. Some method of appeal should be exercised on him.

### Must Pass Display

The Repass Automobile Co. of Waterloo, Iowa, solved the problem of merchandising equipment in a very effective manner. Every purchaser must come in the front door of this store and in order to reach that front door he must pass along a good length of display window. That display window is the key to the entire situation. The Repass Company could stack that window full of spark plugs, gaskets and various other items but they don't. Instead it is filled with equipment. The customer sees

these things as he passes by, as he enters the store and all the time he is in the store. The order counter is just back of the display space.

The customer may have a list of what he needs in his memorandum book but as he enters the sales room he compiles and revises his list mentally. As he sees the service hoist he feels that that is a thing his shop should possess. With one of these hoists he could snap in the highway job in one tenth the time now consumed. He feels that the arbor press would save him lots of trouble and time. There are other items which he feels would increase the efficiency of his service and he mentally decides that at a future date he will place his order for the items.

### The Silent Salesman

The display space, right where every customer can see the items, is hammering away an appeal day by day. The customer begins to succumb to the argument. (Continued on page 38)

# It Pays to Recondition Trades Analyze Salesmen's Reports

*Some Merchandising Pointers of Interest to All Dealers*

By H. Lionel Williams

IT pays big to recondition used trucks taken in trade, according to C. H. La Rue, of the GMC Truck Co., St. Louis branch. La Rue is sales manager of the Yellow Knight Division of GMC Truck Co. and he finds it a paying proposition to put trucks that are at all serviceable in proper running condition before resale. Very few prospects for these jobs are interested in a vehicle that cannot be driven away to do a considerable amount of work without attention. It is worth quite a little money to be able to tell the customer to drive the truck out and it is only business common sense to see that the truck will be in condition to earn the money to pay for itself. Most buyers of used trucks buy on payments and very often they are of a class that relies on the truck for their living. Therefore until the last payment is made the vehicle must be in condition to do the work expected of it at a minimum of expense.

If, of course, a truck is really nothing more than junk, it should be junked. On the other hand if a trade is taken at, say \$250, it may be reasonable to spend \$150 or more on it. Such an expenditure has more than once brought up the sales value by more than double the cost of the reconditioning, and put the truck in working condition so that it is on the job earning money rather than back in the shop for repairs.

One important aspect of the used truck sales problem is that the buyer who is ready to take a chance on a vehicle in bad condition for the sake of the low price is probably a poor risk as a creditor. Selling good used trucks therefore cuts down the possibility of repossession and improves the tone of the business generally. Good equipment sells quickly, junk does not.

## Helping the Salesmen

It pays to help salesmen help themselves. That is another fact that La Rue has proved for himself. His salesmen get results because their efforts are most effective and exerted where they are not wasted.

Intelligent direction of sales effort is the prime function



C. H. La Rue, Sales Manager of Yellow Knight Division of GMC Truck Co., St. Louis

of sales management and in order to direct this effort the manager must know of what that effort consists. That is the reasons for the salesman's daily report.

These reports are not a check on the salesmen. This principal use is to indicate the most effective way of making sales in the particular territory to which they refer and no real salesman can take exception to their use.

The form used by the Yellow Truck & Coach division shows exactly what the salesman does each day, the number of sales made, the number of recalls, new prospects listed, names to be removed from prospect list, the deals pending that depend largely on an appraisal, the number of prospects brought to the showroom and the number of assists they have had from the salesmanager in closing sales.

A glance at a number of these reports shows a wide variation in results obtained. Some will make fifty calls and only two sales while others will show thirty calls and five sales. The poorer results may be the fault of the salesmen or they may not. It is the salesmanager's

job to determine where the trouble lies and find out whether they are not real prospects or the salesmen efforts are not effective. In this the number of re-calls and demonstrations are a valuable guide and help in detecting wasted effort.

To the salesman himself the reports should be exceedingly valuable in helping him to visualize what he is doing and so enable him to plan his work intelligently.

## The 90-Day Stall

Every truck salesman knows the prospect who is never quite ready to make a buy. The purchase date is always 30, 60 or 90 days ahead and in the meantime it's no use discussing the matter. When they call near the time set the truck has already been sold by a competitor. This is one of the conditions that La Rue takes pains to avoid. Most of these prospects will listen if the salesman makes it clear that he is not trying to make a sale. The idea then is to give the prospect full details of the truck at

(Continued on page 23)

SALESMAN'S DAILY REPORT		
TO BE HANDED SALES MANAGER AT MORNING MEETING FOR BLACKBOARD RECORD		
SALESMAN'S NAME _____		DATE _____
SALES TODAY	SALES THIS MONTH	SALES TO DATE
MODEL _____	MODEL _____	MODEL _____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
TOTAL _____		
HEREWITH _____ CARDS INDICATING NEW PROSPECTS ORIGINATED BY PERSONAL CALL ONLY		
NAMES		ADDRESS
KILLS—TO BE REMOVED FROM PROSPECT LIST		
_____		
_____		
_____		
RECALLS—NOTE—INDICATE IN LEFT COLUMN WHETHER 1ST, 2ND OR 3RD CALL, ETC.		
_____		
_____		
_____		
APPRAISALS—LIST HERE PENDING DEALS WHERE APPRAISAL IS FACTOR		
_____		
_____		
DEMONSTRATIONS—NAMES OF PROSPECTS TO WHOM TRUCK HAS BEEN DEMONSTRATED OR EXHIBITED AT THEIR PLACE OF BUSINESS		
_____		
_____		
BROUGHT TO STORE—NAMES OF PROSPECTS INTRODUCED PERSONALLY TO MANAGEMENT		
_____		
_____		
ASSISTS—PROSPECTS WHO HAVE BEEN CANVASSED BY MANAGER OR SALES MANAGER		
_____		
_____		
IF NOT ENOUGH SPACE USE OTHER SIDE		

A report designed to show of what salesman effort consists



# Welding Parts *Without* Removing Them From the Vehicle

By C. C. Hermann

**M**OTOR truck and bus repairing involves the replacement of broken and worn elements, adjustment of the various take-up devices and the rearrangement of systems to obtain harmonious operation.

Our insatiable demand for speed at any cost results in building up mountains of scrap steel and iron every year in the repairing business. The customer pays the bill, nevertheless it is an economic loss effecting the country as a whole for any mechanic to throw into the scrap an element which could be salvaged at a reasonable cost and with an ultimate repair charge below what a new element would cost. Too many mechanics who can effect repairs only by replacement and too few who can actually make a repair. The mere replacement of an element, in a majority of instances, does not involve a very high degree of mechanical skill. The actual repair of a worn or broken element, on the other hand, does involve skill on the part of the mechanic.

## Fill and Rebore

For example a truck came into the shop with the spider of the universals badly worn. The holes of two of the arms were worn entirely through and the drive was by means of one bolt only. The piece would have been thrown on the scrap heap and a new one inserted but for the fact that another element of like design was not in stock. The holes were filled by use of the welder and new holes drilled. The total time of filling was about five minutes involving the use of approximately 2 cu. ft. of oxygen and 1 1/4 cu. ft. of acetylene and 4 oz. of wire at a total cost of \$0.15 plus the labor. The labor, of course, includes the time of preparing the piece for the weld in all about 10 minutes or \$0.13. The piece must now be laid out and drilled besides requiring a little grinding on the face of the arms to smooth them. This required another 1/4 hour or \$0.20 for labor. The total cost for the repair was \$0.81 whereas the new piece would cost \$1.80 besides the necessity of waiting several days for the piece to come from the factory. The \$0.81 includes 100% shop overhead. The resulting piece was considered just as good as the original and would, no doubt, last as long as the truck.

On various occasions repairs have been made by welding without removing the unit from the vehicle. The expense of removing a part from the car is usually the largest portion of the cost. For example, the shifting lever was broken off four inches above the floor boards. To remove the shifting lever would involve

removing the top of the transmission or approximately 1 1/2 hours labor taking off and the same time replacing. A small electric portable grinder was at hand so the stub of the lever was ground as shown in Figure 1. The broken portion was also ground likewise. A helper was provided with a pair of welders goggles and instructed in the holding of the broken end in place while the welder was at work. A 3/16 rod was used. Six minutes completed the actual welding at a total expenditure of 3 cu. ft. of oxygen and 2 cu. ft. of acetylene. Seven ounces of welding rod was used. The total cost of the job was \$1.25 as compared with approximately \$5.00 were the lever to be removed and replaced. The finished weld was dressed up with the electric grinder and given a coat of enamel.

Welds such as this require certain precautions with regard to placing a metal shield before the flame to prevent heating and scorching other parts. The operator must also use extreme care in handling the torch in order to avoid burns as the quarters are close between the front seat and the dash. A metal sheet should also be placed on the floor boards to prevent molten metal from dropping on the wood. Of course where such welding is carried on near gas lines, carburetor or gas tank extra precautions

must be taken to empty the gasoline and in many cases also remove the gas lines. The tubing of such gas lines is readily melted by the high temperature flame of the torch and must not be in direct line with the torch. With a little forethought and preparation the welding can proceed with comparative safety and results which are satisfactory.

## Welding engine suspension bracket

A repair that is very common and can be done without excessive dismantling consists in welding the engine suspension bracket. Only recently manufacturers have gone to the steel support between the engine and frame. Formerly such supports were entirely cast iron and semi-steel. Such supports were frequently broken by twists in the car structure and general vibration. No estimate of the time involved in preparing the pieces for the weld can be given, due to the vast difference in the assembly of different cars. However, it is safe to say that where the weld can be done without removing the engine fully sixty per cent of the time can be saved. On one such repair with a six-cylinder engine the total labor of removing certain parts which were in the way and their subsequent removal required five hours. The prepar-

(Continued on page 23)

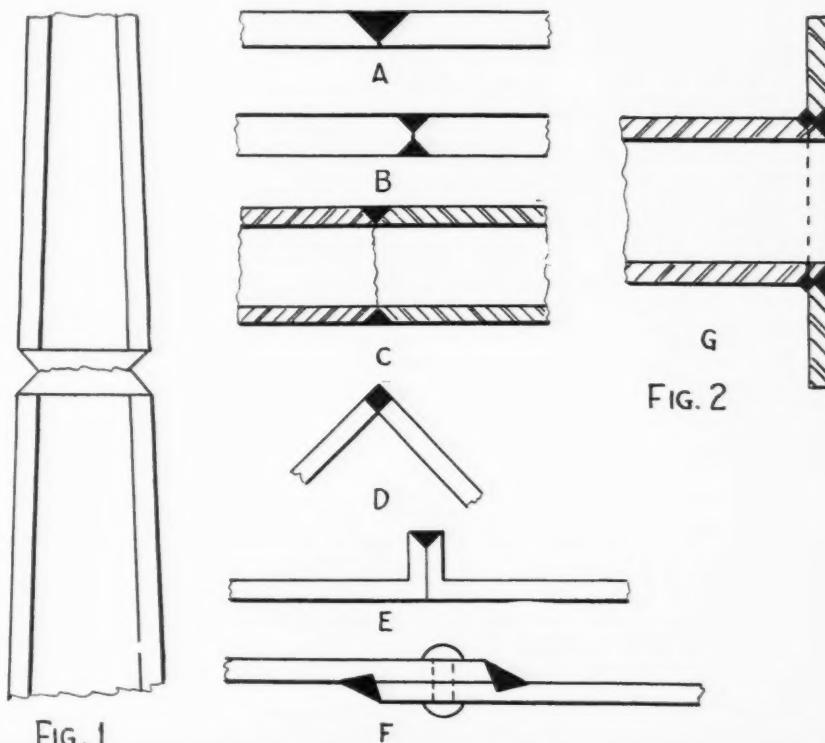


Fig. 1. Gear Shift lever ready to be welded. Fig. 2. Illustrating various set-ups of welding forms. See text

*for Economical Transportation*

# Another Chevrolet Achievement

## New Low Prices

**1-Ton Truck** <sup>\$</sup>**495**  
reduced to

**½-Ton Truck** <sup>\$</sup>**375**  
reduced to

*(Chassis only) f.o.b. Flint, Michigan*



Engineered to meet the most severe requirements of commercial haulage, Chevrolet trucks have won worldwide acceptance on the basis of low first cost, low operating cost and slow depreciation.

This spectacularly growing popularity has made necessary a greatly increased production—the economies of which are now passed on to buyers in the form of a drastic price reduction.

CHEVROLET MOTOR COMPANY, DETROIT, MICHIGAN  
Division of General Motors Corporation

## World's Lowest Priced Gear-shift Trucks





# EDITORIALS



## Provided Terms Are Sensible

**M**UCH criticism has been forthcoming recently on the matter of instalment selling and many economists are viewing the growth of this form of merchandising with alarm. In the motor truck industry attention is being called to the tremendous amount of paper that some motor truck manufacturers and large distributors are carrying, and if one were to take the prognostications of some economists seriously we will find most of these concerns on the financial rocks in the near future.

However, the surprising thing about it is that those companies who are presumably overstocked with paper have been weathering the storm for years and instead of showing signs of failing are generally improving with age.

The instalment selling idea is too old to question the feasibility of it. It's not the plan that causes trouble but the manner in which it is executed. One of the factors which must be carefully considered in connection with each sale is an equitable down-payment and terms in relation to the total amount of the purchase. In the truck industry the same individual can purchase a five-thousand vehicle on better terms relatively speaking than on a thousand-dollar vehicle. That brings up a phase of instalment buying which must be rectified.

## Modifying the Vocational Plan

**A**N international organization is investigating the merits of zone versus vocational selling. Their conclusions, if they are made public, will interest most truck dealers, for this is a question that faces so many sales managers at one time or another.

The inquiry so far has sharply differentiated between the two plans and takes no stock of the compromise policy that appears to be the best way out for many dealers. This compromise plan consists of allocating the salesmen to zones, but set periods are arranged for calling on different trades. In some cases the period fixed is a week, when the drive is made on, say, coal dealers; next week it may be bakers, or laundries.

This plan has quite a lot to recommend it, for intensive study of the requirements of one particular business enables the salesman to talk to the prospect with the full understanding of their requirements. At the same time the zone method of apportioning territory gives the salesmen experience in diversified businesses so that they eventually may be classed as all-around transportation experts. As such they are more likely to be of value to their employers and to themselves in whatever territory they are placed.

With such a working arrangement the utmost benefit can be secured from the usual sales meetings when the sales manager can concentrate on the subject of selling to one class of buyers instead of talking generalities.

This modified vocational plan of selling trucks should be worth the consideration of sales managers who have not attained the success they expected under other schemes.

## Passenger Car Influence

**T**HE influence of the passenger car in motor truck construction is becoming more pronounced in certain respects. For instance, the use of the six-cylinder engine in the delivery and speed type of commercial vehicle is an example. The greater number of passenger cars on the highway requires the motor truck to keep in step with the flow of traffic. Quicker acceleration, a smoother power flow and higher average speeds are all qualities attributed to the six-cylinder engine.

Better seating arrangements to promote driver comfort, closed cabs, better lighting facilities, low-pressure tires, attractive body lines and so forth are all contributing to make the delivery vehicle just as easily handled and as comfortable as the high-priced passenger car. And the mechanical efficiency of the motor truck is perhaps greater in the long run compared with passenger cars, especially if the relative operating methods of the two is considered. All of which indicates that the future design of the motor truck will not only reflect strength and serviceability, but beauty as well.

# News of the Trade

## Railroad Subsidiaries Seek State-Wide Truck and Bus Charters

Charter applications by subsidiary companies of the Pennsylvania railroad and the Reading Railroad which propose to parallel and augment the steam lines of these carriers with motor freight and passenger service, have been referred "to Attorney General Woodruff for thorough investigation," by Governor Gifford Pinchot.

The public service commission has approved the charter of the Pennsylvania General Transit Company, the subsidiary of the Pennsylvania Railroad, and it is now in the hands of Governor Pinchot for his action. The governor declined to further amplify his statement.

It is understood that the state authorities are desirous of ascertaining whether approval of the charters would result in a monopoly of motor freight and passenger service on Pennsylvania highways by the big rail carriers.

The Pennsylvania application covers fifty-five counties in the state while the Reading charter application covers eleven counties.

The commission recently approved an application by the Pennsylvania bus subsidiary to operate a freight service in Washington county but refused permission to transport passengers because the route already was covered by a certificate holder.

## Exceptional Demand for A.E.R.A. Space

The demand for exhibition space for the Cleveland Convention of the American Electric Railway Association has exceeded all expectations, as may be gathered from the fact that when the Exhibit Committee met to make the official space assignment, it had in hand applications from 195 members. When the assignment was completed, a total of 107,630 sq. ft. exclusive of track space had been allotted.

The contract for the Auditorium West Wing has been let, and work has been started on the building, which will be ready in ample time to accommodate exhibitors.

Director of Exhibits, Fred Dell, reported that up to the close of business July 29th, 112,916 sq. ft. of space had been assigned to 202 member companies. This figure compared with those of the same date last year, shows that there are 13 more exhibitors, using 25,648 more sq. ft. of space, only 87,268 sq. ft. having been allotted on July 29, 1925.

The 45th Annual Convention of the A.E.R.A. promises to be the largest and most successful ever held by this organization and from the advance requests

for hotel reservations as reported by Paul Wilson, Chairman of the Hotel and Housing Committee, it is a foregone conclusion that the attendance and registration will be the heaviest for which the Association has ever had to prepare.

## International Harvester Reports Good Business in Iowa

Exceeding the peak year of 1920, the Mason City branch of the International Harvester company had this year the best year in its history, states E. A. Scott, manager. The largest increase was in motor trucks and tractors, and Mr. Scott estimates that 40 per cent more farm implements were sold this season than last. Farmers are reported to be paying cash in most instances.

## Yellow T. & C. Reduces Taxi Price

A reduction of \$150.00 in the price of the sedan type model C-5 taxicab has been announced by John A. Ritchie, president of the Yellow Truck & Coach Manufacturing Company.

Generators, formerly priced at \$50 extra will now be standard equipment on this model cab. The new list price of this vehicle is now \$2450 f.o.b. Chicago.

## Coming Events

### SHOWS

Boston, Mass. ....	March 5-12
Mechanics Bldg.	
Chicago .....	Nov. 8-13
Coliseum, Automotive Equipment Association.	
Chicago .....	Nov. 15-19
Hotel Sherman, National Standard Parts Association.	
Chicago .....	Jan. 29-Feb. 5
National, Coliseum, National Automobile Chamber of Commerce.	
Cleveland .....	Oct. 4-8
Exhibit, Public Auditorium and Annex, American Electric Railway Association.	
Dallas, Texas .....	Oct. 9-24
Automobile Bldg.	
New York .....	Jan. 8-15
National, Grand Central Palace, National Automobile Chamber of Commerce.	
Springfield, Ill. ....	Oct. 28-29
Second Annual Bus Show, State Armory, Illinois Motor Transportation Association.	
Wichita, Kans. ....	Feb. 22-25
Southwest Road Show, Wichita Thresher and Tractor Club, Inc.	

### CONVENTIONS

American Electric Railway Association, Public Auditorium and Annex, Cleveland .....	Oct. 4-8
Automotive Equipment Association, Coliseum, Chicago .....	Nov. 8-13
National Standard Parts Association, Hotel Sherman, Chicago .....	Nov. 15-19
National Tire Dealers' Association, Inc., Memphis, Tenn. ....	Nov. 16-18
Society of Automotive Engineers, National Transportation and Service Meeting, Boston, Mass. ....	Nov. 16-18

### COMING FEATURE ISSUES OF CHILTON CLASS JOURNAL PUBLICATIONS

September 15—Commercial Car Journal—Annual Bus Issue.	
September 30—Automotive Industries—Annual Production Issue.	

## Parts and Accessory Industry Starts Second Half Strong

The automotive parts and accessory industry is proceeding with a vigorous stride into business of the second half of the year. While June sales showed a recession from May and a still further drop may be expected for July, the levels of production and distribution are substantially higher than they were a year ago and the outlook may be described as conservatively optimistic, according to the Motor & Accessory Manufacturers Association.

The first half year's aggregate business of a large number of members of the Association making parts and accessories for original equipment and trade sales and machinery and tools for automotive repair shops ran well above the same period last year. With January, 1925, deliveries as a base index of 100, the first six months' monthly average was 153 as compared with 137 for the first half of 1925. The second quarter's business this year showed a slight decline from the first quarter, however, as compared with a gain last year for the second quarter over the first.

June deliveries, according to the association, aggregated 141% of January, 1925, as compared with 151% in May and 158% in June last year. Shipments of original equipment in June were at an index of 140 as compared with 145 in May, replacement parts shipments dropped from 177 in May to 135 in June, accessory deliveries dropped from 183 in May to 140 in June and repair shop machinery and tools showed a gain from 175 in May to 184 in June.

The M. & A. M. A. Business Bulletin just issued to members shows net profits of parts and accessory manufacturers and also of automotive equipment jobbers for the first half of the year slightly in excess of the first six months of 1925. On the whole, expectations of the industry are for a large and fairly prosperous year's business.

## Post Office Department to Buy Trailers

Sealed bids for the supplying of 50 automobile trailer trucks will be opened by the Post Office Department on August 25, it is announced by Thomas L. Degnan, purchasing agent. According to the department's specifications, the trucks are to be constructed in accordance with blueprints which will be forwarded to prospective bidders by the purchasing agent. Bids in each instance must be signed by an authorized officer of the company, to be considered by the department.



## Traction Company Builds Experimental Bus

The Northern Ohio Power & Light Company has just completed the assembly of a bus said to be particularly suited for use in cities with steep grades, such as are encountered in Akron. The body is being built at Cleveland in the H. C. Kuhlman plant. The chassis was designed by the engineering staff of the company, under the direction of P. V. C. See. It is of all-steel construction. It will be known as the Northern Ohio bus, and will be made in sufficient numbers to meet the needs of the company and its subsidiaries. Seating 29 passengers, it has a wheelbase of 234 in., an overall chassis length of 320 in. and a frame height at the driver's seat of 27 in.

Since it entered the field of bus transportation four years ago, the Northern Ohio Power & Light Company has accumulated a fleet of 250 buses, and while some of these were fairly well adapted to the service demands, others proved a failure. After investigating market conditions the company came to the conclusion that it could assemble a bus chassis better adapted to its needs and at a lower price than any of those it had purchased.

## Highway Hoist Purchased by Wood Hydraulic

The Highway Associate Companies of Edgerton, Wisconsin, the Highway Trailer Company and the Continental Axle Company announce the sale of their Highway mechanical hoist to the Wood Hydraulic Hoist & Body Company of Detroit. This step was taken in the face of the fact that the Highway Hoist has been very successfully marketed for a number of years.

It is only one of the things that are planned by the Edgerton Associates to permit of the concentration of their manufacturing facilities upon the line of Highway trailers and to make room for the new line of Highway power lift-quick detachable semi-trailers, a development in semi-trailer design and operation that will be announced very soon.

H. F. Kanauer, sales manager of the commercial division, says of the disposal of the hoist: "The era of the trailer is just at the point of bursting into bloom. The tendency toward heavy hauling on the highways will not only continue to grow but will grow more rapidly as it gains momentum and as the highways are developed to receive the traffic. The motor truck of the future will be a locomotive and its train of freight cars will be trailers."

## Hinkley Plant to be Sold

All machinery, tools and factory equipment of Hinkley Motors, Inc., will be sold at auction Aug. 17 and 18 at the plant in Ecorse, near Detroit. The Hinkley company specialized in the manufacture of heavy-duty engines for trucks, and also made a replacement engine for Ford trucks.

## G.M. Net Earnings \$93,285,674 for Half

Net earnings of General Motors Corp. in the first six months of the year aggregated \$93,285,674, its volume of business and earnings in this period being the highest in its history. Earnings in the first half of 1925 were \$50,363,099. In the 1926 period each of the corporation's units established new high records, according to A. P. Sloan, Jr., president.

The balance sheet as of June 30, which has been issued recently, shows cash and marketable securities of about \$195,000,000, Mr. Sloan said. This statement will include the properties acquired by consolidation with Fisher Body Corp. While the earnings applicable to the 40 per cent minority interest in the Fisher corporation outstanding during the first six months were not consolidated with the earnings of General Motors, "it is nevertheless of interest to note," said Mr. Sloan, "that the combined net earnings of the two corporations for this period aggregate \$101,699,954."

Mr. Sloan said sales of the corporation's products reflected through every operating division show substantial increases in volume.

## American La France Shows Larger Earnings

Net income of \$406,204 is reported by American La France Fire Engine Co., Inc., Elmira, N. Y., for the period ending June 30. This compares with \$339,490 for the same period in 1925. Interest and Federal tax items are included in both figures.

Spicer Mfg. Co. reports profits of \$1,041,550 after depreciation and interest but before Federal taxes, for the first six months of the year. Earnings per share were \$2.93. Earnings in the first six months of 1925 were \$966,169 or \$2.69 a share. Profits in the first two quarters were practically identical, \$520,579 being earned in the first, and \$520,971 in the second.

Pierce-Arrow Motor Car Co. reports net income of \$474,861 for the quarter ended June 30, after depreciation, Federal taxes and all charges. This compares with \$328,982 in the preceding quarter, and with \$364,714 in the second quarter of 1925. For the first six months of the year net income was \$803,843, comparing with \$502,131 in the first half of 1925.

Timken-Detroit Axle Co. net income for the six months ended June 30 was \$1,223,069 after charges equivalent, after allowing for dividends on the 7 per cent stock, to \$1.29 on the 827,345 shares of outstanding common stock. This compares with \$678,700, or 63 cents a share on 823,920 shares outstanding in the first half of 1925.

## Parker Truck Reorganized. Offer New Line

The Parker Truck Company, Milwaukee, Wis., recently reorganized with J. Grossman as its head, announces the production of a new line of trucks, 1 to 3½ tons capacity.

Leading this line is the "Chariot," a 1-ton speed truck.

Powered with the Wisconsin model SU—4 x 5—4-cylinder engine, which develops 50 h.p. at 2000 r.p.m. A Timken bevel gear axle is used with 6 3/7 to 1 reduction, giving a road speed of 45 miles p. h.

The line also includes the "Junior" 1½ ton model, and 2½ and 3½ ton heavy duty. As in the speed truck, Wisconsin engines and Timken front and rear axles, are specified for the larger jobs.

## Garford Truck Co. Succeeds Garford Motor Truck Co.

The Garford Truck Co. recently took over the property and assets and assumed the liabilities of the Garford Motor Truck Co., Lima, Ohio. The new company will continue to manufacture and improve the Garford truck and bus line, will centralize the responsibility and control of business operations and embark on a strong merchandising policy.

Officers and personnel are mainly unchanged, with C. M. Allen as president; Paul Moore, vice-president and general manager; I. A. Stull, secretary and treasurer; W. E. Conway, director in charge of sales, and H. E. Burke, director in charge of purchases.

## Boston to Buy Equipment for Snow Removal

Bids on motor equipment for removal of snow will be asked by the city government of Boston in the near future. More than \$400,000 has been made available for this purpose by the mayor and city council. Delivery will be required by fall.

An exceptionally heavy snow fall last winter, which found the city's equipment inadequate to handle the situation, also revealed the fact that it was almost impossible to hire the needed equipment in such an emergency. The decision to buy equipment for the city followed.

Motor trucks, snow plows, service cars and tractors are the principal items of equipment on which proposals will be asked.

## Rajah Spark Plug Stock Sold to Employees

David B. Mills, former president and principal stockholder of the corporation doing business as the Rajah Auto-Supply Co., Bloomfield, N. J., manufacturers of Rajah spark plugs and terminals, has sold all of the capital stock of the above corporation to four of his employees, who have assumed the following offices: Robert A. Bell, president; Wilbur D. Washburn, treasurer; George Berthold, vice-president and engineer; Elizabeth G. Keeler, secretary.

## P. R. R. Announces Motor Transportation Policy

Use of hired motor trucks for l. c. l. freight traffic between stations, replacing "peddler" freight trains, and operation of buses only in those instances where conditions necessitate such operation, constitute the present policy of the Pennsylvania Railroad, according to information obtained at the general offices in Philadelphia.

The application for charter for the Pennsylvania General Transit Co., a subsidiary corporation, and its approval about the time of the announcement of the plans of the B & O to operate buses from Jersey City to New York gave rise to newspaper stories that the Pennsylvania was about to embark on a similar motor passenger service. The Pennsylvania road is carrying out plans formulated and made known months ago and was not influenced by announcement of plans of other roads, according to officials of the company.

One thousand miles of directly operated line has been motorized for l. c. l. freight from station to station during the past 2½ years by the Pennsylvania lines. Trucks and semi-trailers are also being used for inter-station and inter-line transfer work at terminals. Cincinnati, St. Louis—East St. Louis, Detroit, Baltimore, Philadelphia, and New York Harbor are the important terminals where truck service is being used for transfers.

Door-to-door delivery of l. c. l. is a probable development of the future, according to Elisha Lee, vice-president of the Pennsylvania, who states in an article in "Pennsylvania Railroad Information" and reprinted from the Timken Magazine that door-to-door delivery must be established gradually, that co-operative action by all railroads is desirable and necessary, investment of existing truckmen must be considered as must investment in existing rail facilities, the service must be optional and must be paid by the shippers as a separate charge from rail rates.

The Pennsylvania will shortly operate a bus line from Waynesburg to Washington, Pa. At present a narrow gage rail line connects Waynesburg with Washington. At the latter point a standard gage rail line connects with the main line at Pittsburgh.

## Chevrolet Takes Over New England Territory

J. C. Chick, sales executive for the Chevrolet Motor Co., formally took over the entire organization of W. C. Sills, Inc., New England distributors for Chevrolet passenger cars and trucks during the past few years. Mr. Chick will supervise the retail stores and service stations at Boston, Portland and Providence in addition to the wholesale departments covering all New England. Working under Mr. Chick will be several men from the Chevrolet organization. Mr. Sills has opened an office in the Park Square Building where he will look after his investments.

## GMC Completes St. Louis Branch

The General Motors Truck Co., St. Louis branch at 2640-44 Washington boulevard, was recently completed. The service department is in a room 80 feet by 275 feet with out a post. In this room is a full equipped machine shop with all necessary tools to service all sizes of trucks and motor coaches. A complete stock of parts is carried for GMC trucks, Yellow coaches and Yellow-Knight trucks.

## Personals

**Garrison Ball**, formerly vice-president and sales manager of the American Bronze Company, has been appointed field secretary of the Motor & Accessory Manufacturers Association.

**Arthur A. Brown** has been made assistant to the vice-president of the Westinghouse Electric and Mfg. Co.

**V. V. Casey** will represent the Bonney Forge & Tool Works' sales organization in Pennsylvania, southern New York, Maryland, District of Columbia and New Jersey.

**E. F. Hathorn** has joined the engineering staff of the Highway Trailer Company. He was formerly with the Campbell Transmission Company and the Mason Motor Truck Company.

**Charles J. Murray** has become associated with the Oklahoma Contracting Co. He was formerly with the Linde Air Products Company.

**George S. Piroomoff** has been promoted to staff assistant in charge of the transportation engineering department of the technical division of the White Co. to fill the vacancy created by the resignation of S. G. Thompson.

**Ivan Racheff** has been appointed metallurgical engineer of the Racine Radiator Co.

**H. D. Randall** has been made sales manager of the gear section of the industrial department of the General Electric Company.

**William P. Savage** has been appointed representative of the Lyon Metallic Mfg. Co. for district covering Metropolitan New York, southern Connecticut, eastern Pennsylvania, New Jersey and Delaware. **W. J. Rowe** will cover western Pennsylvania, New York, Vermont, New Hampshire, Massachusetts, northern Connecticut and Maine.

**O. E. Stoll** has resigned his position as president of the General Motors Truck Co. and vice-president of Yellow Truck and Coach Mfg. Co. in charge of the truck division. **C. H. Engelman** has resigned his position as general sales manager of General Motors Truck Co. He is succeeded by **Victor G. Phillips**, who will also have charge of sales of the Yellow-Knight organization.

**R. L. Wilkinson**, vice-president and sales manager of the Klaxon Company and service manager of the Remy Electric Co., has been appointed service manager of the Dayton Engineering Co., manufacturers of Delec starting, lighting and ignition equipment.

**F. H. Williams**, a former vice-president of the White Company, also a former president of the Philadelphia Motor Truck Association, has resigned his position as manager of the Philadelphia district of the White Company. He is succeeded by **A. W. Osborn**, who was connected with M. A. O'Mara, regional vice-president in New York.

**Howard Winton**, formerly advertising manager of the Heli Company, has been appointed general branch manager of that company. **Arthur Nicolas** becomes advertising manager.

## Kelly-Springfield Engineering Department Reorganized

Jack Detrick as chief engineer has reorganized the engineering department of the Kelly Springfield Truck & Bus Company. He has had wide experience in motor truck designing and manufacture. For twenty years he has been in this line of business with some of the well known companies such as the Hudson, Federal, Universal, Republic, Dodge Bros. and Ford companies.

In late years he served as consulting engineer. He was experimental and research engineer with Graham Bros. The engineers are working out improvements, which the Kelly-Springfield Truck & Bus Co. will take advantage of later in the manufacture of new products.

## Luxor Receivers Will Continue Operations

Manufacturing operations of the Luxor Cab Mfg. Corp. will be continued under the receivers in equity appointed by Judge John Hazel in the United States District Court, New York.

The plant is at Birmingham, Mass. The company has assets of \$1,000,000 but the liquid capital has been tied up in financing sales. Budd Wheel Co., of Philadelphia, brought the equity suit on a claim for \$4582. Myer Nussbaum and Reginald P. Boyd are the receivers.

## Three Models Added to Fageol Line

New three, four and six-ton truck models with Waukesha six-cylinder engines and seven-speed transmissions have been introduced by the Fageol Motors Co. It is stated that these new jobs in no way supplant other heavy-duty Fageol trucks with Hall-Scott engines but have been added to the line to provide a Fageol truck for every trucking purpose.

## Reo Building Large Shipping Plant

The Reo Motor Car Co., is building a large shipping plant, three stories in height and having a floor area of approximately eight acres, at the Lansing, Mich. factory. Shipping docks 600 ft. long with facilities for loading on each side are also being built. The entire project is scheduled for completion by mid-September.

## Our Mistake—Mr. Pulcher!

A personal item which appeared in our last issue to the effect that "Mr. Pulcher has been advanced from assistant sales manager to the sales manager of the distributor division of the Federal Motor Truck Company" is all wrong. Mr. F. P. Soper is the man who got the promotion. Mr. Soper is one of the oldest members of the Federal sales organization, having been with the company for twelve years and serving in the capacity of assistant sales manager since 1917. Mr. Pulcher has been president of the Federal company since its inception.



## Welding Parts Without Removing Them From Chassis

(Continued from page 17)

ation of the broken portions involved one hour and the actual welding fifteen minutes. The material used for the weld was 5 cu. ft. of oxygen, 3.75 cu. ft. of acetylene and 10 oz. of welding rod. The total cost was \$10.40.

The preparation of the pieces for welding is fully fifty per cent of the success enjoyed. Unless the preparation is correct the best welding outfit procurable cannot make a first-class job. Not only must the pieces be properly matched in order to have the finished element in its proper position thereby avoiding extra time in enlarging holes, but the broken edge must be worked upon with a file or grinder to form a place for the new metal. Obviously, if the pieces are fit together along the irregular line of the fracture there will be no space for the welding metal. To separate the pieces ever so slightly results in the finished piece being longer than the original. The latter result would involve latter fitting of the completed piece to the old position. In some places the welding material may be piled up on the weld and a fairly stiff joint produced, however, the best practice is to provide a recess in the pieces for the welding material.

See Illustration Page 17

In Figure 2 are shown a few examples of how certain work is prepared for the welding. At "A" and "B" are shown two types of butt welding. At "A" the ends of the pieces are ground bevel as shown and the V-groove thus produced by the joining of the two pieces filled with the welding rod as indicated by the black portion. At "B" the beveling is done on both sides of the broken pieces bringing the old metal to metal contact in the center. The V-groove thus formed on both sides are then filled with the welding rod as indicated by the black portion. In either case the welding material is built slightly higher than the original surface of the piece after which this surplus metal is removed by grinding or otherwise dressing down.

At "C" is shown a common method of welding pipe. The broken ends are ground bevel and then matched with perhaps a cylindrical piece within the pipe to hold it in place. The V groove is then filled. At "D" is shown how to weld two pieces matching at right angles. The pieces are placed together with their inner corners touching and the corner filled in. In the case of a break in the corner of a right angle bracket or other similar case the corner metal is ground away to form the condition as illustrated. At "E" is shown how to weld a flanged joint. At "F" is shown how to weld a lap joint which has been riveted but has worked loose. The joint is ground on both sides as shown and then filled. At "G" is shown how to weld a flange on a pipe.

## Parts Association Adopts Arbitration System

An arbitration tribunal which will provide effective facilities for the amicable adjustment of all business controversies in which its members may become involved, has been formed by the National Standard Parts Association. The arbitration committee is composed of these members: Jobbers—John R. Stanley, Stanley-Brandt Co., Alexandria, La.; E. A. Henderson, Henderson Bros., Sacramento, Calif.; L. T. White, Motor Bearings & Parts Co., Raleigh, N. C.; W. H. H. Childs, P. D. Q. Company, Philadelphia, Pa.; F. H. Carlisle, Replacement Parts Co., Boston, Massachusetts; L. H. Ward, Buffalo Bearings Co., Buffalo, New York.

Manufacturers—W. B. Huber, W. B. Huber & Co., Los Angeles, Calif.; B. R. Winborn, Detroit Steel Products Co., Detroit, Michigan; F. J. Glennon, Kant Skore Piston Company, Cincinnati, Ohio; L. A. Dall, Dall Motor Parts Co., Cleveland, Ohio; S. M. Prior, Fafnir Bearing Co., New Britain, Conn.; E. A. Ewing, Ochrome Valve Co., Baltimore, Maryland.

Machinery is now being set up to prepare a standardized catalog embracing alphabetical and numerical dimensional reference tables and standard stock numbers for all lines of replacement parts.

The compilation of the alphabetical and dimensional data is being done by the Franklin Press of Detroit, Michigan, under the supervision of Robert Macfee, assistant manager of the association.

## Willard Adds to Plant

The Willard Storage Battery Company, Cleveland, has started construction of an additional building at its 131st Street plant. The structure which will be one and three-story construction of reinforced concrete faced with brick and will cost \$50,000.

The Heil Co., Milwaukee, has just issued its new bulletin No. 159, which describes Heil Sprinkler Tanks. These tanks are designed especially for use with the Ford truck.

## It Pays to Recondition and Analyze Salesmen's Reports

(Continued from page 16)

first so that when he does come to buy he will have a clear idea of what he wants and whether this particular make of vehicle meets his needs.

After an explanation of the features of his truck, the salesman casually inquires whether the specification meets with the buyer's approval, and if not, in what respect. If he raises an objection then sell him on what he does not know. The next step is to suggest that if the new truck is expected to make a saving over the old equipment or in some other way why wait 90 days to begin?

## Oshkosh Stockholders Approve Reorganization Plan

Plans for reorganizing the Oshkosh Motor Truck Co., Oshkosh, Wis., manufacturer of quadruple drive trucks, were approved at a meeting of stockholders attended by 80 per cent of the members of the corporation. Under the reorganization plan contemplated, the company would take over the present stock and issue new stock in exchange for it, subject to the bond issue. While the Oshkosh company has been in production without serious interruption, it has not been able to take advantage of the increasingly active commercial car market because of the lack of capital.

## Federal Truck Sales Gain 31%

The Federal Motor Truck Co., of Detroit, reports its record breaking volume of business is continuing. Sales for June were 31% greater than last year the same month. The factory reports increased demand for six-cylinder jobs on pneumatic tires for quick delivery.



## Will Head Republic West Coast Branch System

The Republic Motor Truck Co., has established a system of branches on the west coast, by opening three branches, one in Los Angeles, one in San Francisco and one in Portland. The men in charge have been selected with great care, each man having a thorough knowledge of the truck business. Each branch will carry a complete assortment of stock for all Republic models, while a considerable stock of new trucks will be carried to supply Republic distributors in all Pacific Coast States. The names of the personnel, reading from left to right, are as follows: R. H. Spencer, Pacific Coast Manager; K. A. Woodin, San Francisco; G. A. Anderson, Los Angeles, and Glenn Harmon, Portland.



New United 3-3 1/2 ton, Model 70 truck chassis

## Two New Models of United Trucks

Two new models, a 1-1 1/4 ton and a 3-3 1/2 ton, have been added to the line of United trucks made by United Motors Products Co., Grand Rapids, Mich.

The lighter truck, known as model 20, has a Hercules engine 4" bore x 5" stroke, L-head with removable cylinder head, developing 30 hp. at 1600 r.p.m. Autolite electrical equipment is used including starter, ignition and lights. Pneumatic tires 30 x 5 are standard equipment.

Model 70 truck, of 3-3 1/2 ton capacity has a 7" frame of annealed steel. Power is supplied by a Hercules engine 4 1/2 x 5 1/4. Rear axle is full-floating double reduction. This model is designed for long distance heavy freight hauling and cross country moving. Supplied with a shorter wheelbase the model 70 is adapted for the hauling of gravel, sand and building materials.

Both of the new models are finished in United Persian orange with hoods, fenders and running-boards of black baked enamel. Model 70 radiator is buffed aluminum.

## Morrison Automatic Jack

Double range lifting height and a two-speed drive are features of Morrison jacks manufactured by the Woods En-



Note telescoping rack bar

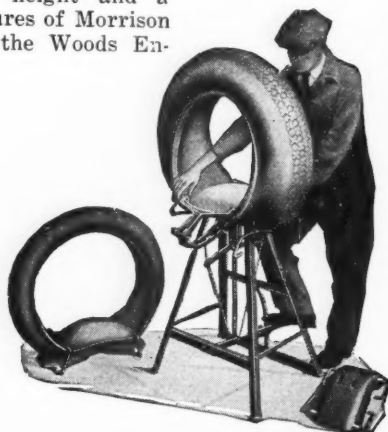
gineering Co., Alliance, Ohio. Telescoping rack bars are used to give ample lift and still permit the jack to be made low enough to fit under all axles. All gears and moving parts are machine cut, an unusual refinement in jack construction.

Double lift single speed jacks are made in five sizes, from one lifting medium weight cars to one designed for 2 1/2 ton trucks or 20-passenger buses. Two speed jacks are made in four models, capacities from 3 1/2 ton trucks and large buses to 5 to 7 1/2 ton trucks and double deck buses. A single lift model and a balloon tire jack are also made by the company.

## Weaver Spreader for High Pressure or Balloon Tires

Weaver Mfg. Co., Springfield, Ill. has brought out a tire spreader adapted for use with either balloon or high pressure tires. Adjustment for the two types of tires is provided by a lever and link arrangement. Spreading of the tire for examination is accomplished by pressing on a pedal which is used with either adjustment of the spreader arms. A buffing plate, which can be removed with a

tire, is supplied with the machine. The new spreader designated as model "I" takes a floor space 24 x 30 in. and can be moved about the shop, as it is not necessary to bolt the legs to the floor.



Pressure on a pedal spreads the tire for examination

## Eliminates Red Ink Service

(Continued from page 14)

cement with edges raised so the cement floor may be flushed without flooding the pits. Special ladders provide entry to the pits. Over each vise, or that part of the work bench over which the mechanics work, are large electric lights with good reflectors. The lighting arrangements, day and night, are unusually good throughout.

Each mechanic has his own hand tools including mikes, calipers, etc. Reamers, taps, dies, etc., are in the parts room. In front of each vise is a large, thick asbestos mat so that in cold weather the feet of the men will not be chilled. The buildings are heated by a modern heating plant. Compressed air is piped to all parts of the building.

Mechanics desiring oil make known their wants, and job number, to the parts room department. The oil supply, in tanks, is in the parts room, and pipes extend through the partition to the service station so that if a mechanic desires 6 qts. for the crankcase, the faucet on his side will yield 6 qts. and no more. Oil and lubricant is accounted for.

Relative to the mechanics, who are, by the way, the real old New England Yankee type, they have records of long service. The service head is W. J. Alberty, who is now in his eleventh year with the company, and he stated that two men have been two and three years longer. Another has a seven year record. The writer watched these men. They had little to say, but they worked.

Service is rendered from 7 in the morning to 7 at night. Two men go on at 9:30 a. m. and work until 7 as does one stock room man. Night service was tried out without success. For six months the shop was open until 11 p. m. but despite extra pay the men objected so the plan was dropped.

Flat rate is not employed. Mr. Alberty endorses it but holds that with about 20 models to service and some 10 to 12 years old, flat rate would be a difficult task to work out satisfactorily to all concerned. At no time in recent years has there been any non-productive time for whenever there is a little lull the men are shunted to rebuilding unit work.

As has been stated modern shop equipment is employed. Overhead tracks with Yale & Towne hoists make easy the handling of heavy units and transporting them from one place to another. The tire press department is equipped with the overhead tracks and hoists. It is interesting to note that Carpenter has been using a 200-ton press, and selling truck tires for over 12 years and would not be without this department for it not only is a money maker but is a branch of the service plan.

The machine shop is unusually large for a truck dealer. There are four lathes, a 28, 18, 16 and 14 in., a universal grinder, a special lathe, three drill presses, a shaper, a universal miller, grinders, cut-off saw, arbor presses, etc.

(Continued on page 38)



# Commercial Car Specifications—Corrected Monthly

The Specifications, Chassis Prices, Etc., Are Corrected Each Month From Data Supplied Direct by the Makers.  
Gasoline Tractor-Trucks Will be Found at the End of Gasoline Commercial Cars

Those Chassis Which Are Sold and Recommended for Bus Use Are Designated in the Following Table by Reference Sign (\$) in Front of the Name  
For Motor Bus Chassis See Pages 35 and 36

(Where prices are not given it is because we have been unable to get them from authoritative sources)

Key of abbreviations, page 37

Trade Name and Model	General			Engine					Electrical System		Clutch	Gearset		Rear Axle		Gear Ratios		Front Axle Make and Model	Springs (Make)	Steering Gear (Make)	Wheels (Make)	Rims (Make)	Chassis Weight (lbs.)							
	Standard Wheelbase (inches)	Tire Size		Bore and Stroke	N.A.C.C. Rated H.P.	Valve Arrangement	Oiling System	Governor (Make)	Radiator (Make)	Fuel System		Generator and Starter (Make)	Type and Make	Location	No. of Forward Speeds	Universals (Make)	Make and Model							Final Drive	Type	Total Reduction in High	Total Reduction in Low	Brakes, Location		
		Front (inches)	Rear (inches)							Carburetor (Make)	Fuel Feed (Make)																		Ignition System (Make)	
<b>1000 Pounds</b>																														
Chevrolet Sup. Com. Ch.	395 103	P 30x3 1/2	P 30x3 1/2	4-3 3/4x4 1/2	21 7/8	H	18 2 L	PS	Non	Non	Har Fed	Car Til	V V	Rem A-L	Rem A-L	P. Own	U A	3 3	Own Spi	Own Sup	S S	3.82 12.7	4.87 16.16	A A	Own Sup	S.S.	Own	Own	Jax Hay	1490 1475
<b>1500 Pounds</b>																														
Dodge Brothers, No. 1	670 116	P 31x5 25	P 31x5 25	4-3 3/4x4 1/2	24 0	L	SP	Non	Non	McC	Sle Zen	N-E	V G	Rem A-L	Rem A-L	D. Own	U U	3 3	Own Spi	Own Sup	S S	4.16 18.9	4.45 18.9	A A	Own Sup	Own	Own	Own	Kel	2202
Int. Harvester Spec. Del	113	P 31x4	P 32x4 1/2	4-3 3/4x4 1/2	19 6 1/4	L	PC	Non	Non	Fed	Lon Zen	Rem Bos	V G	Rem A-L	Rem A-L	Roc M-M	U U	3 3	Own Spi	Own Sup	B B	4.45 18.9	4.45 18.9	A A	Own Sup	D-G	Own	Own	Kel	2202
Larrabee	133	P 29x4 1/2	P 29x4 1/2	4-3 3/4x4 1/2	23 4	L	PC	Non	Non	Fed	Lon Zen	Rem Bos	V G	Rem A-L	Rem A-L	P. B-L	U U	3 3	Own Spi	Own Sup	B B	5.10 17.1	5.10 17.1	A A	Own Sup	She Gem	Own	Own	Fir	2000
Stewart Buddy	895 118	P 30x5 25	P 30x5 25	4-3 3/4x4 1/2	18 2 1/2	L	PC	Non	Non	Fed	Lon Zen	Rem Bos	V G	Rem A-L	Rem A-L	P. B-L	U U	3 3	Own Spi	Own Sup	B B	4.8 30.0	4.8 30.0	A A	Own Sup	Own Gem	Own	Own	Fir	2730
White, 15	2150 133 1/2	P 34x5	P 34x5	4-3 3/4x4 1/2	22 5 L	L	SP	Non	Non	Own	Own Zen	Rem Bos	V G	Rem A-L	Rem A-L	P. Own	U A	4 4	Own Spi	Own Sup	B B	5.36 18.6	5.36 18.6	A A	Own Sup	Own Gem	Own	Own	Fir	2250
Yellow Cab Mod T3...	1295 109	P 29x4 1/2	P 29x4 1/2	4-3 3/4x4 1/2	22 5 L	L	PS	Non	Non	Lon	Lon Zen	Rem Bos	V G	Rem A-L	Rem A-L	N-E	U U	3 3	Own Spi	Own Sup	B B	4.90 16.3	4.90 16.3	B B	Own Sup	Mar	Own	Own	Fir	2500
<b>1 Ton</b>																														
Acorn	2050 144	P 34x5	P 34x5	4-4 1/2x4 1/2	28 9	L	FP	Non	Non	Chi Fed	Zen Zen	R Bo	G G	Rem A-L	Rem A-L	D. Ful	U U	3 3	Own Spi	Own Sup	S S	5.66 22.6	5.66 22.6	A A	Own Sup	Tut	Own	Own	Ros	3000
Atterbury 20B	132	P 30x5	P 30x5	4-3 3/4x4 1/2	23 4	L	PC	Non	Non	Non	Fed Zen	A-L	G G	Rem A-L	Rem A-L	D. B-L	U U	3 3	Own Spi	Own Sup	B B	5.10 17.03	5.10 17.03	A A	Own Sup	She Gem	Own	Own	Fir	3200
Autocor F	37	S 34x4 1/2	S 34x4 1/2	4-4 1/2x4 1/2	18 1 1/2	L	SP	Non	Non	Own	Own Str	Bos	G G	Rem A-L	Rem A-L	P. Own	U A	3 3	Own Spi	Own Sup	R R	8.30 33.2	8.30 33.2	A A	Own F	Del	Own	Own	Hoo	3800
Bethlehem KN	1595 120	P 33x5 1/2	P 33x5 1/2	4-4 1/2x4 1/2	19 6 1/4	L	FP	Non	Non	Bus	Own Zen	G A-L	G G	Rem A-L	Rem A-L	P. B-L	U U	3 3	Own Spi	Own Sup	B B	6.80 27.4	6.80 27.4	A A	Own F	Del	Own	Own	Hoo	3900
Biederman	1595 120	P 33x5 1/2	P 33x5 1/2	4-4 1/2x4 1/2	22 7 1/2	L	FP	Non	Non	Chi	Own Zen	Rem Bos	V G	Rem A-L	Rem A-L	D. Ful	U U	3 3	Own Spi	Own Sup	B B	5.5 23.4	5.5 23.4	A A	Own Sup	Mat	Own	Own	Cla	3200
Casco A.	1700 150	P 34x5 1/2	P 34x5 1/2	4-4 1/2x4 1/2	21 7/8	L	FP	Non	Non	Non	Own Zen	Rem Bos	V G	Rem A-L	Rem A-L	D. Ful	U U	3 3	Own Spi	Own Sup	B B	5.85 23.4	5.85 23.4	A A	Own Sup	Mat	Own	Own	Cla	3200
Chevrolet Sup.	550 124	P 30x3 1/2	P 30x3 1/2	4-3 3/4x4 1/2	22 5/8	L	PC	Non	Non	Non	Own Zen	Rem Bos	V G	Rem A-L	Rem A-L	D. Ful	U U	3 3	Own Spi	Own Sup	B B	5.43 27.16	5.43 27.16	A A	Own Sup	Mat	Own	Own	Cla	3200
Clydesdale 16	130	P 34x5	P 34x5	4-4 1/2x4 1/2	28 9 1/2	L	FP	Non	Non	Non	Own Zen	Rem Bos	V G	Rem A-L	Rem A-L	D. B-L	U U	3 3	Own Spi	Own Sup	B B	6.83 30.86	6.83 30.86	A A	Own Sup	Mat	Own	Own	Cla	3200
Commer Distributor	130	P 30x5	P 30x5	4-3 3/4x4 1/2	23 4	L	PC	Non	Non	Non	Own Zen	Rem Bos	V G	Rem A-L	Rem A-L	D. B-L	U U	3 3	Own Spi	Own Sup	B B	5.66 20.5	5.66 20.5	A A	Own Sup	Mat	Own	Own	Cla	3200
Concord K	130	P 30x5	P 30x5	4-3 3/4x4 1/2	22 5 1/2	L	FP	Non	Non	Non	Own Zen	Rem Bos	V G	Rem A-L	Rem A-L	D. B-L	U U	3 3	Own Spi	Own Sup	B B	5.66 20.5	5.66 20.5	A A	Own Sup	Mat	Own	Own	Cla	3200
Corbett 21	132	P 30x5	P 30x5	4-3 3/4x4 1/2	18 1 1/2	L	FP	Non	Non	Non	Own Zen	Rem Bos	V G	Rem A-L	Rem A-L	D. B-L	U U	3 3	Own Spi	Own Sup	B B	5.66 18.9	5.66 18.9	A A	Own Sup	Mat	Own	Own	Cla	3200
Danby 41	128	P 34x5	P 34x5	4-4 1/2x4 1/2	25 6 1/8	L	PC	Non	Non	Non	Own Zen	Rem Bos	V G	Rem A-L	Rem A-L	D. Ful	U U	3 3	Own Spi	Own Sup	S S	5.8 23.2	5.8 23.2	A A	Own Sup	Det	Own	Own	Cla	3200
Diamond T76	2400 130	P 30x5	P 30x5	4-4 1/2x4 1/2	25 6 1/8	L	PC	Non	Non	Non	Own Zen	Rem Bos	V G	Rem A-L	Rem A-L	D. Ful	U U	3 3	Own Spi	Own Sup	S S	5.8 23.2	5.8 23.2	A A	Own Sup	Det	Own	Own	Cla	3200
Dorris K-2	130	P 33x5	P 33x5	4-3 3/4x4 1/2	22 5 1/8	L	FP	Non	Non	Non	Own Zen	Rem Bos	V G	Rem A-L	Rem A-L	D. B-L	U U	3 3	Own Spi	Own Sup	B B	5.23 18.6	5.23 18.6	A A	Own Sup	Mat	Own	Own	Cla	3200
Duplex G	1065 124	P 32x4 1/2	P 32x4 1/2	4-3 3/4x4 1/2	21 0	X	FC	Non	Non	Non	Own Zen	Rem Bos	V G	Rem A-L	Rem A-L	D. B-L	U U	3 3	Own Spi	Own Sup	B B	4.25 15.6	4.25 15.6	A A	Own Sup	Mat	Own	Own	Cla	3200
Federal Knight	136	P 32x5 1/2	P 32x5 1/2	4-3 3/4x4 1/2	18 2 1/2	L	FP	Non	Non	Non	Own Zen	Rem Bos	V G	Rem A-L	Rem A-L	D. B-L	U U	3 3	Own Spi	Own Sup	B B	6.11 22.3	6.11 22.3	A A	Own Sup	Mat	Own	Own	Cla	3200
Fisher Jr. Express	325 123	P 30x5 25	P 30x5 25	4-3 3/4x4 1/2	22 5 1/8	L	FP	Non	Non	Non	Own Zen	Rem Bos	V G	Rem A-L	Rem A-L	D. B-L	U U	3 3	Own Spi	Own Sup	B B	5.1 19.9	5.1 19.9	A A	Own Sup	Mat	Own	Own	Cla	3200
Garford 15	1590 132	P 34x5	P 34x5	4-3 3/4x4 1/2	22 5 1/8	L	FP	Non	Non	Non	Own Zen	Rem Bos	V G	Rem A-L	Rem A-L	D. B-L	U U	3 3	Own Spi	Own Sup	B B	5.50 24.7	5.50 24.7	A A	Own Sup	Per	Own	Own	Cla	3200
Garfy Express	1590 132	P 35x5	P 35x5	4-3 3/4x4 1/2	22 5 1/8	L	FP	Non	Non	Non	Own Zen	Rem Bos	V G	Rem A-L	Rem A-L	D. B-L	U U	3 3	Own Spi	Own Sup	B B	5.50 24.7	5.50 24.7	A A	Own Sup	Per	Own	Own	Cla	3200
GMC K-17	136	P 34x5	P 34x5	4-3 3/4x4 1/2	20 3 1/8	L	FP	Non	Non	Non	Own Zen	Rem Bos	V G	Rem A-L	Rem A-L	D. B-L	U U	3 3	Own Spi	Own Sup	B B	6.1 23.67	6.1 23.67	A A	Own Sup	Det	Own	Own	Cla	3200
Goffredson 20 B	131	P 30x5	P 30x5	4-3 3/4x4 1/2	22 5 1/8	L	FP	Non	Non	Non	Own Zen	Rem Bos	V G	Rem A-L	Rem A-L	D. B-L	U U	3 3	Own Spi	Own Sup	B B	5.66 17.0	5.66 17.0	A A	Own Sup	Det	Own	Own	Cla	3200
Graham Bros. BC	885 126	P 33x5	P 33x5	4-3 3/4x4 1/2	24 0	L	PS	Non	Non	Non	Own Zen	Rem Bos	V G	Rem A-L	Rem A-L	D. B-L	U U	3 3	Own Spi	Own Sup	B B	5.10 21.3	5.10 21.3	A A	Own Sup	Det	Own	Own	Cla	3200
Graham Bros. IB	1045 140	P 33x5	P 33x5	4-3 3/4x4 1/2	24 0	L	PS	Non	Non	Non	Own Zen	Rem Bos	V G	Rem A-L	Rem A-L	D. B-L	U U	3 3	Own Spi	Own Sup	B B	5.10 21.3	5.10 21.3	A A	Own Sup	Det	Own	Own	Cla	3200
Graham-Burnett 10	129	P 30x5	P 30x5	4-3 3/4x4 1/2	22 5 1/8	L	FP	Non	Non	Non	Own Zen	Rem Bos	V G	Rem A-L	Rem A-L	D. B-L	U U	3 3	Own Spi	Own Sup	B B	5.85 23.3	5.85 23.3	A A	Own Sup	Per	Own	Own	Cla	3200
Graham-Kincaid 233N	133	P 30x5	P 30x5	4-3 3/4x4 1/2	22 5 1/8	L	FP	Non	Non	Non	Own Zen	Rem Bos	V G	Rem A-L	Rem A-L	D. B-L	U U	3 3	Own Spi	Own Sup	B B	5.85 23.3	5.85 23.3	A A	Own Sup	Per	Own	Own	Cla	3200
Graham-Kincaid 263N	133	P 30x5	P 30x5	4-3 3/4x4 1/2	22 5 1/8	L	FP	Non	Non	Non	Own Zen	Rem Bos	V G	Rem A-L	Rem A-L	D. B-L	U U	3 3	Own Spi	Own Sup	B B	5.85 23.3	5.85 23.3	A A	Own Sup	Per	Own	Own	Cla	3200
Grass Premier 40	1650 130	P 30x5	P 30x5	4-3 3/4x4 1/2	27 3/8	L	FP	Non	Non	Non	Own Zen	Rem Bos	V G	Rem A-L	Rem A-L	D. B-L	U U	3 3	Own Spi	Own Sup	B B	6.42 30.9	6.42 30.9	A A	Own Sup	Per	Own	Own	Cla	3200
Indiana 11	124	P 32x5	P 32x5	4-3 3/4x4 1/2	25 6 1/8	L	PC	Non	Non	Non	Own Zen	Rem Bos	V G	Rem A-L	Rem A-L	D. B-L	U U	3 3	Own Spi	Own Sup	B B	5.1 24.6	5.1 24.6	A A	Own Sup	Per	Own	Own	Cla	3200
Int'l Harvester S	2150 131	P 30x5 1/2	P 30x5 1/2	4-3 3/4x4 1/2	22 5 1/8	L	FP	Non	Non	Non	Own Zen	Rem Bos	V G	Rem A-L	Rem A-L	D. B-L	U U	3 3	Own Spi	Own Sup	B B	5.66 22.8	5.66 22.8	A A	Own Sup	Per	Own	Own	Cla	3200
King-Zeller 25	140	P 30x5	P 30x5	4-3 3/4x4 1/2	22 5 1/8	L	FP	Non	Non	Non	Own Zen	Rem Bos	V G	Rem A-L	Rem A-L	D. B-L	U U	3 3	Own Spi	Own Sup	B B	5.1 24.5	5.1 24.5	A A	Own Sup	Per	Own	Own	Cla	3200
Kleber	2600 130	P 34x4	P 34x4	4-3 3/4x4 1/2	28 9 1/2	L	FP	Non	Non	Non	Own Zen	Rem Bos	V G	Rem A-L	Rem A-L	D. B-L	U U	3 3	Own Spi	Own Sup	B B	5.1 24.5	5.1 24.5	A A	Own Sup	Per	Own	Own	Cla	3200
Kleber	1800 140	P 32x6	P 32x6	4-3 3/4x4 1/2	27 3/8	L	FP	Non	Non	Non	Own Zen	Rem Bos	V G	Rem A-L	Rem A-L	D. B-L	U U	3 3	Own Spi	Own Sup	B B	6.42 30.9	6.42 30.9	A A	Own Sup	Per	Own	Own	Cla	3200
Lange K	1800 140	P 32x6	P 32x6	4-3 3/4x4 1/2	25 3 1/8	L	PC	Non	Non	Non	Own Zen	Rem Bos	V G	Rem A-L	Rem A-L	D. B-L	U U	3 3	Own Spi	Own Sup	B B	6.43 30.9	6.43 30.9	A A	Own Sup	S.P.	Own	Own	Hoo	3900

Key of abbreviations, page 37

Trade Name and Model	General			Engine					Electrical System		Clutch	Gearset		Rear Axle		Gear Ratios		Front Axle Make and Model	Springs (Make)	Steering Gear (Make)	Wheels (Make)	Rims (Make)	Chassis Weight (lbs.)	
	Standard Wheel-base (inches)	Tire Size	Rear (inches)	Make and Model	Number of Cylinders	N.A.C.C. Rated H.P.	Engine			Ignition System (Make)		Generator and Starter (Make)	Type	Total Reduction in High	Total Reduction in Low	Brakes, Location								
							Bore and Stroke	Valve Arrangement	Oiling System								Governor (Make)							Radiator (Make)
1 Ton—Cont'd																								
LeMoon GP-1	151	P 34x5 1/2	P 34x5	Con S4	4-4 1/2 x 4 1/2	28.9 L	FP	Non	Chi	Str	G	Apo	Bos	D-B-L	B-L 31	U	3	Spi	Cla Wis 800G	Tut	Ros	Smi	Fir	2700
Luedinghaus	130	P 34x4 1/2	P 34x4 1/2	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Eis	Bos	D-B-L	B-L 31	U	3	Spi	Cla LD	Ros	Lav	Sol	Fir	2850
Master 11B	132	P 34x5	P 34x5	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Eis	Bos	D-B-L	B-L 31	U	3	Spi	Cla B-260	Tut	Lav	Sol	Fir	2925
Menominee	132	P 34x5	P 34x5	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Eis	Bos	D-B-L	B-L 31	U	3	Spi	Cla B-260	Tut	Lav	Sol	Fir	2925
Nash 2018	132	P 34x5	P 34x5	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Eis	Bos	D-B-L	B-L 31	U	3	Spi	Cla B-260	Tut	Lav	Sol	Fir	2925
Noble A-76	1775	P 34x5 1/2	P 34x5 1/2	Bud N	4-4 1/2 x 4 1/2	22.5 L	PS	Non	Chi	Str	G	Eis	Bos	D-B-L	B-L 31	U	3	Spi	Cla B-260	Tut	Lav	Sol	Fir	3100
Ogden A-2	132	P 34x5	P 34x5	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Eis	Bos	D-B-L	B-L 31	U	3	Spi	Cla B-260	Tut	Lav	Sol	Fir	2925
O. K.	1705	P 34x5	P 34x5	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Eis	Bos	D-B-L	B-L 31	U	3	Spi	Cla B-260	Tut	Lav	Sol	Fir	2925
Parker Charnok	1750	P 34x5	P 34x5	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Eis	Bos	D-B-L	B-L 31	U	3	Spi	Cla B-260	Tut	Lav	Sol	Fir	2925
Ruggles 16	122	P 34x5	P 34x5	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Eis	Bos	D-B-L	B-L 31	U	3	Spi	Cla B-260	Tut	Lav	Sol	Fir	2925
Sandow GA	130	P 34x5	P 34x5	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Eis	Bos	D-B-L	B-L 31	U	3	Spi	Cla B-260	Tut	Lav	Sol	Fir	2925
Schacht	132	P 34x5	P 34x5	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Eis	Bos	D-B-L	B-L 31	U	3	Spi	Cla B-260	Tut	Lav	Sol	Fir	2925
Service 25H	146	P 34x5	P 34x5	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Eis	Bos	D-B-L	B-L 31	U	3	Spi	Cla B-260	Tut	Lav	Sol	Fir	2925
Stewart 16	124	P 34x5	P 34x5	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Eis	Bos	D-B-L	B-L 31	U	3	Spi	Cla B-260	Tut	Lav	Sol	Fir	2925
U. S. U.	125	P 34x5 1/2	P 34x5 1/2	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Eis	Bos	D-B-L	B-L 31	U	3	Spi	Cla B-260	Tut	Lav	Sol	Fir	2925
Wachusett T	1850	P 34x5	P 34x5	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Eis	Bos	D-B-L	B-L 31	U	3	Spi	Cla B-260	Tut	Lav	Sol	Fir	2925
Yellow Cab T-1	1450	P 34x5	P 34x5	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Eis	Bos	D-B-L	B-L 31	U	3	Spi	Cla B-260	Tut	Lav	Sol	Fir	2925
Yellow Knight T-1	1550	P 34x5	P 34x5	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Eis	Bos	D-B-L	B-L 31	U	3	Spi	Cla B-260	Tut	Lav	Sol	Fir	2925
Yellow Knight T-2	1095	P 32x4 1/2	P 32x4 1/2	Con S	4-3 1/2 x 4 1/2	18.9 X	PS	Non	McC	Zen	G	Rem	Rem	P-B&B	Mun T23	U	3	Thet	Tim 5310-21	Mar	Gem	Bud	Fir	2740
1 1/4 Ton																								
Acme 24	130	P 30x5	P 30x5	Con S4	4-4 1/2 x 4 1/2	28.9 L	FP	Non	Per	Zen	G	Bos	Bos	D-B-L	B-L 31	U	3	Blo	Col 5300G	Det	Ros	Smi	Fir	3625
Autocar F	97	P 34x4 1/2	P 34x4 1/2	Con 6M	2-4 1/2 x 4 1/2	18.1 L	SP	Non	Per	Zen	G	Bos	Bos	D-B-L	B-L 31	U	3	Blo	Col 5300G	Det	Ros	Smi	Fir	3800
Bedford	120	P 34x4 1/2	P 34x4 1/2	Con 6M	2-4 1/2 x 4 1/2	18.1 L	SP	Non	Per	Zen	G	Bos	Bos	D-B-L	B-L 31	U	3	Blo	Col 5300G	Det	Ros	Smi	Fir	3800
Brookway E8	153	P 32x6	P 32x6	Wau V	4-4 1/2 x 4 1/2	27.3 L	PC	Non	Per	Zen	G	Bos	Bos	D-B-L	B-L 31	U	3	Blo	Col 5300G	Det	Ros	Smi	Fir	3600
Clinton 20B	153	P 30x5	P 30x5	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Bos	Bos	D-B-L	B-L 31	U	3	Blo	Col 5300G	Det	Ros	Smi	Fir	3750
Clinton 20	153	P 30x5	P 30x5	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Bos	Bos	D-B-L	B-L 31	U	3	Blo	Col 5300G	Det	Ros	Smi	Fir	3750
Clydesdale 10A	154	P 34x5	P 34x5	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Bos	Bos	D-B-L	B-L 31	U	3	Blo	Col 5300G	Det	Ros	Smi	Fir	3750
Defiance G2	128	P 34x5	P 34x5	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Bos	Bos	D-B-L	B-L 31	U	3	Blo	Col 5300G	Det	Ros	Smi	Fir	3750
Defiance G2	128	P 34x5	P 34x5	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Bos	Bos	D-B-L	B-L 31	U	3	Blo	Col 5300G	Det	Ros	Smi	Fir	3750
Federal R-3	1675	P 33x5	P 33x5	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Bos	Bos	D-B-L	B-L 31	U	3	Blo	Col 5300G	Det	Ros	Smi	Fir	3750
Gramm-Bernstein 10	129	P 30x5	P 30x5	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Bos	Bos	D-B-L	B-L 31	U	3	Blo	Col 5300G	Det	Ros	Smi	Fir	3750
Gramm-Kincaid 23N	133	P 30x5	P 30x5	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Bos	Bos	D-B-L	B-L 31	U	3	Blo	Col 5300G	Det	Ros	Smi	Fir	3750
Guider B-6	132	P 30x5	P 30x5	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Bos	Bos	D-B-L	B-L 31	U	3	Blo	Col 5300G	Det	Ros	Smi	Fir	3750
Hahn B2	1650	P 30x5	P 30x5	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Bos	Bos	D-B-L	B-L 31	U	3	Blo	Col 5300G	Det	Ros	Smi	Fir	3750
Master 11	132	P 30x5	P 30x5	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Bos	Bos	D-B-L	B-L 31	U	3	Blo	Col 5300G	Det	Ros	Smi	Fir	3750
Menominee HT	130	P 30x5	P 30x5	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Bos	Bos	D-B-L	B-L 31	U	3	Blo	Col 5300G	Det	Ros	Smi	Fir	3750
Patriot 17R	129	P 30x5	P 30x5	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Bos	Bos	D-B-L	B-L 31	U	3	Blo	Col 5300G	Det	Ros	Smi	Fir	3750
Reo F	124	P 30x5	P 30x5	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Bos	Bos	D-B-L	B-L 31	U	3	Blo	Col 5300G	Det	Ros	Smi	Fir	3750
Reo F	124	P 30x5	P 30x5	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Bos	Bos	D-B-L	B-L 31	U	3	Blo	Col 5300G	Det	Ros	Smi	Fir	3750
Reo F	124	P 30x5	P 30x5	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Bos	Bos	D-B-L	B-L 31	U	3	Blo	Col 5300G	Det	Ros	Smi	Fir	3750
Reo F	124	P 30x5	P 30x5	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Bos	Bos	D-B-L	B-L 31	U	3	Blo	Col 5300G	Det	Ros	Smi	Fir	3750
Reo F	124	P 30x5	P 30x5	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Bos	Bos	D-B-L	B-L 31	U	3	Blo	Col 5300G	Det	Ros	Smi	Fir	3750
Reo F	124	P 30x5	P 30x5	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Bos	Bos	D-B-L	B-L 31	U	3	Blo	Col 5300G	Det	Ros	Smi	Fir	3750
Reo F	124	P 30x5	P 30x5	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Bos	Bos	D-B-L	B-L 31	U	3	Blo	Col 5300G	Det	Ros	Smi	Fir	3750
Reo F	124	P 30x5	P 30x5	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Bos	Bos	D-B-L	B-L 31	U	3	Blo	Col 5300G	Det	Ros	Smi	Fir	3750
Reo F	124	P 30x5	P 30x5	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Bos	Bos	D-B-L	B-L 31	U	3	Blo	Col 5300G	Det	Ros	Smi	Fir	3750
Reo F	124	P 30x5	P 30x5	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Bos	Bos	D-B-L	B-L 31	U	3	Blo	Col 5300G	Det	Ros	Smi	Fir	3750
Reo F	124	P 30x5	P 30x5	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G	Bos	Bos	D-B-L	B-L 31	U	3	Blo	Col 5300G	Det	Ros	Smi	Fir	3750
Reo F	124	P 30x5	P 30x5	Wau V	4-4 1/2 x 4 1/2	25.6 L	PC	Non	Per	Zen	G</													



[illegible]

Trade Name and Model	General			Engine				Electrical System		Gearset		Rear Axle		Gear Ratios		Front Axle Make and Model				Chassis Weight (lbs.)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	Tire Size		Standard Wheelbase (inches)	Bore and Stroke	N.A.C.C. Rated H.P.	Oiling System		Governor (Make)	Radiator (Make)	Fuel System		Ignition System (Make)	Generator and Starter (Make)	Clutch	Type and Make	Make and Model	Location	No. of Forward Speeds	Universals (Make)	Rear Axle		Gear Ratios		Brakes, Location	Front Axle Make and Model	Springs (Make)	Steering Gear (Make)	Wheels (Make)	Rims (Make)	Chassis Weight (lbs.)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	Front (inches)	Rear (inches)				Valve Arrangement	Carburetor (Make)			Pump Feed	Final Drive									Type	Total Reduction in High	Total Reduction in Low																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
																																	Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High		Total Reduction in Low		Type		Total Reduction in High</

[illegible]



Rep	Year	Age	Sex	Color	Height	Weight	Measure	Remarks	Owner	Trainer	Driver	Coach	Notes
1537	1934	3	M	B	14.5	145	145	145	145	145	145	145	145
1538	1934	3	M	B	14.5	145	145	145	145	145	145	145	145
1539	1934	3	M	B	14.5	145	145	145	145	145	145	145	145
1540	1934	3	M	B	14.5	145	145	145	145	145	145	145	145
1541	1934	3	M	B	14.5	145	145	145	145	145	145	145	145
1542	1934	3	M	B	14.5	145	145	145	145	145	145	145	145
1543	1934	3	M	B	14.5	145	145	145	145	145	145	145	145
1544	1934	3	M	B	14.5	145	145	145	145	145	145	145	145
1545	1934	3	M	B	14.5	145	145	145	145	145	145	145	145
1546	1934	3	M	B	14.5	145	145	145	145	145	145	145	145
1547	1934	3	M	B	14.5	145	145	145	145	145	145	145	145
1548	1934	3	M	B	14.5	145	145	145	145	145	145	145	145
1549	1934	3	M	B	14.5	145	145	145	145	145	145	145	145
1550	1934	3	M	B	14.5	145	145	145	145	145	145	145	145
1551	1934	3	M	B	14.5	145	145	145	145	145	145	145	145
1552	1934	3	M	B	14.5	145	145	145	145	145	145	145	145
1553	1934	3	M	B	14.5	145	145	145	145	145	145	145	145
1554	1934	3	M	B	14.5	145	145	145	145	145	145	145	145
1555	1934	3	M	B	14.5	145	145	145	145	145	145	145	145
1556	1934	3	M	B	14.5	145	145	145	145	145	145	145	145
1557	1934	3	M	B	14.5	145	145	145	145	145	145	145	145
1558	1934	3	M	B	14.5	145	145	145	145	145	145	145	145
1559	1934	3	M	B	14.5	145	145	145	145	145	145	145	145
1560	1934	3	M	B	14.5	145	145	145	145	145	145	145	145
1561	1934	3	M	B	14.5	145	145	145	145	145	145	145	145
1562	1934	3	M	B	14.5	145	145	145	145	145	145	145	145
1563	1934	3	M	B	14.5	145	145	145	145	145	145	145	145
1564	1934	3	M	B	14.5	145	145	145	145	145	145	145	145
1565	1934	3	M	B	14.5	145	145	145	145	145	145	145	145
1566	1934	3	M	B	14.5	145	145	145	145	145	145	145	145
1567	1934	3	M	B	14.5	145	145	145	145	145	145	145	145
1568	1934	3	M	B	14.5	145	145	145	145	145	145	145	145
1569	1934	3	M	B	14.5	145	145	145	145	145	145	145	145
1570	1934	3	M	B	14.5	145	145	145	145	145	145	145	145
1571	1934	3	M	B	14.5	145	145	145	145	145	145	145	145
1572	1934	3	M	B	14.5	145	145	145	145	145	145	145	145

## Key of abbreviations, page 37

Trade Name and Model	Chassis Price	Tire Size		Make and Model	Bore and Stroke	Engine				Electrical System		Clutch	Gearset		Rear Axle	Gear Ratios		Brakes, Location	Front Axle Make and Model	Springs (Make)	Steering Gear (Make)	Wheels (Make)	Rims (Make)	Chassis Weight (lbs.)								
		Standard Wheelbase (inches)	Front (inches)			Rear (inches)	N.A.C.C. Rated H.P.	Valve Arrangement	Oiling System	Governor (Make)	Radiator (Make)		Fuel System			Ignition System (Make)	Generator and Starter (Make)								Type and Make	Location	No. of Forward Speeds	Universals (Make)	Make and Model	Final Drive	Total Reduction in High	Total Reduction in Low
													Carburetor (Make)	Fuel Feed																		
2 1/2 Ton—Cont'd																																
O. K. Oil Spec.	3850	164	36x5	36x10	Bud YBU-1	4-4 1/2x6	32-4 L	PC	Non	Own	Zen	V	Eis	Wis	D. Ful	Ful	A	4	Har	Tim 6566	W	9.25	57.3	A	Shu 610	Tut	Ros	Tim	6550			
Old Reliable	3625	146	36x5	36x10	Wis VAU	4-4 1/2x6	32-4 L	PC	K.P.	Chi	V	Bos	Non	A-L	D. Ful	B-L 51	U	4	Pet	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Oakshof BO.	3625	146	36x5	36x10	Her OX	4-4 1/2x6	32-4 L	PC	Dup	Own	Str	V	Bos	A-L	D. Ful	B-L 51	U	4	Pet	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Oakshof BHO.	3625	146	36x5	36x10	Her OX	4-4 1/2x6	32-4 L	PC	Dup	Own	Str	V	Bos	A-L	D. Ful	B-L 51	U	4	Pet	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Oakshof M.	3625	146	36x5	36x10	Her OX	4-4 1/2x6	32-4 L	PC	Dup	Own	Str	V	Bos	A-L	D. Ful	B-L 51	U	4	Pet	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Oakshof MM.	3625	146	36x5	36x10	Her OX	4-4 1/2x6	32-4 L	PC	Dup	Own	Str	V	Bos	A-L	D. Ful	B-L 51	U	4	Pet	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Oakshof W6 20.	3625	146	36x5	36x10	Her OX	4-4 1/2x6	32-4 L	PC	Dup	Own	Str	V	Bos	A-L	D. Ful	B-L 51	U	4	Pet	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Oakshof W4-25A.	3625	146	36x5	36x10	Her OX	4-4 1/2x6	32-4 L	PC	Dup	Own	Str	V	Bos	A-L	D. Ful	B-L 51	U	4	Pet	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Oakshof W4-25B.	3625	146	36x5	36x10	Her OX	4-4 1/2x6	32-4 L	PC	Dup	Own	Str	V	Bos	A-L	D. Ful	B-L 51	U	4	Pet	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Sandow W6 20.	3625	146	36x5	36x10	Her OX	4-4 1/2x6	32-4 L	PC	Dup	Own	Str	V	Bos	A-L	D. Ful	B-L 51	U	4	Pet	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Sandow W4-25A.	3625	146	36x5	36x10	Her OX	4-4 1/2x6	32-4 L	PC	Dup	Own	Str	V	Bos	A-L	D. Ful	B-L 51	U	4	Pet	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Sandow W4-25B.	3625	146	36x5	36x10	Her OX	4-4 1/2x6	32-4 L	PC	Dup	Own	Str	V	Bos	A-L	D. Ful	B-L 51	U	4	Pet	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Schacht LO.	3600	160	36x5	36x10	Wis RCU	4-4 1/2x6	32-4 L	PC	Non	Own	Zen	V	Eis	Wis	D. Ful	B-L 51	U	4	Har	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Selden 44.	157	164	36x5	36x10	Con K4	4-4 1/2x6	32-4 L	PC	Non	Own	Zen	V	Eis	Wis	D. Ful	B-L 51	U	4	Har	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Selden Unit 50.	149	164	36x5	36x10	Con K4	4-4 1/2x6	32-4 L	PC	Non	Own	Zen	V	Eis	Wis	D. Ful	B-L 51	U	4	Har	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Service 61.	147	164	36x5	36x10	Bud EBU-1	4-4 1/2x6	32-4 L	PC	Non	Own	Zen	V	Eis	Wis	D. Ful	B-L 51	U	4	Har	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Standard 2 1/2-TK.	147	164	36x5	36x10	Con K4	4-4 1/2x6	32-4 L	PC	Non	Own	Zen	V	Eis	Wis	D. Ful	B-L 51	U	4	Har	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Standard 2 1/2-TKS.	147	164	36x5	36x10	Con K4	4-4 1/2x6	32-4 L	PC	Non	Own	Zen	V	Eis	Wis	D. Ful	B-L 51	U	4	Har	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Sterling DW-12.	142	164	36x5	36x10	Con V	4-4 1/2x6	32-4 L	PC	Non	Own	Zen	V	Eis	Wis	D. Ful	B-L 51	U	4	Har	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Stewart 19.	3200	165	36x5	36x10	Lyc	4-4 1/2x6	32-4 L	PC	Non	Own	Zen	V	Eis	Wis	D. Ful	B-L 51	U	4	Har	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Traffic.	2700	140	36x5	36x10	Con S4	4-4 1/2x6	32-4 L	PC	Non	Own	Zen	V	Eis	Wis	D. Ful	B-L 51	U	4	Har	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Twin City BW.	2975	163 1/2	36x5	36x10	Own TW	4-4 1/2x6	32-4 L	PC	Non	Own	Zen	V	Eis	Wis	D. Ful	B-L 51	U	4	Har	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Union City FW.	2975	163 1/2	36x5	36x10	Own TW	4-4 1/2x6	32-4 L	PC	Non	Own	Zen	V	Eis	Wis	D. Ful	B-L 51	U	4	Har	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Union City FW.	2975	163 1/2	36x5	36x10	Own TW	4-4 1/2x6	32-4 L	PC	Non	Own	Zen	V	Eis	Wis	D. Ful	B-L 51	U	4	Har	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Union City FW.	2975	163 1/2	36x5	36x10	Own TW	4-4 1/2x6	32-4 L	PC	Non	Own	Zen	V	Eis	Wis	D. Ful	B-L 51	U	4	Har	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Union City FW.	2975	163 1/2	36x5	36x10	Own TW	4-4 1/2x6	32-4 L	PC	Non	Own	Zen	V	Eis	Wis	D. Ful	B-L 51	U	4	Har	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Union City FW.	2975	163 1/2	36x5	36x10	Own TW	4-4 1/2x6	32-4 L	PC	Non	Own	Zen	V	Eis	Wis	D. Ful	B-L 51	U	4	Har	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Union City FW.	2975	163 1/2	36x5	36x10	Own TW	4-4 1/2x6	32-4 L	PC	Non	Own	Zen	V	Eis	Wis	D. Ful	B-L 51	U	4	Har	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Union City FW.	2975	163 1/2	36x5	36x10	Own TW	4-4 1/2x6	32-4 L	PC	Non	Own	Zen	V	Eis	Wis	D. Ful	B-L 51	U	4	Har	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Union City FW.	2975	163 1/2	36x5	36x10	Own TW	4-4 1/2x6	32-4 L	PC	Non	Own	Zen	V	Eis	Wis	D. Ful	B-L 51	U	4	Har	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Union City FW.	2975	163 1/2	36x5	36x10	Own TW	4-4 1/2x6	32-4 L	PC	Non	Own	Zen	V	Eis	Wis	D. Ful	B-L 51	U	4	Har	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Union City FW.	2975	163 1/2	36x5	36x10	Own TW	4-4 1/2x6	32-4 L	PC	Non	Own	Zen	V	Eis	Wis	D. Ful	B-L 51	U	4	Har	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Union City FW.	2975	163 1/2	36x5	36x10	Own TW	4-4 1/2x6	32-4 L	PC	Non	Own	Zen	V	Eis	Wis	D. Ful	B-L 51	U	4	Har	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Union City FW.	2975	163 1/2	36x5	36x10	Own TW	4-4 1/2x6	32-4 L	PC	Non	Own	Zen	V	Eis	Wis	D. Ful	B-L 51	U	4	Har	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Union City FW.	2975	163 1/2	36x5	36x10	Own TW	4-4 1/2x6	32-4 L	PC	Non	Own	Zen	V	Eis	Wis	D. Ful	B-L 51	U	4	Har	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Union City FW.	2975	163 1/2	36x5	36x10	Own TW	4-4 1/2x6	32-4 L	PC	Non	Own	Zen	V	Eis	Wis	D. Ful	B-L 51	U	4	Har	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Union City FW.	2975	163 1/2	36x5	36x10	Own TW	4-4 1/2x6	32-4 L	PC	Non	Own	Zen	V	Eis	Wis	D. Ful	B-L 51	U	4	Har	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Union City FW.	2975	163 1/2	36x5	36x10	Own TW	4-4 1/2x6	32-4 L	PC	Non	Own	Zen	V	Eis	Wis	D. Ful	B-L 51	U	4	Har	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Union City FW.	2975	163 1/2	36x5	36x10	Own TW	4-4 1/2x6	32-4 L	PC	Non	Own	Zen	V	Eis	Wis	D. Ful	B-L 51	U	4	Har	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Union City FW.	2975	163 1/2	36x5	36x10	Own TW	4-4 1/2x6	32-4 L	PC	Non	Own	Zen	V	Eis	Wis	D. Ful	B-L 51	U	4	Har	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Union City FW.	2975	163 1/2	36x5	36x10	Own TW	4-4 1/2x6	32-4 L	PC	Non	Own	Zen	V	Eis	Wis	D. Ful	B-L 51	U	4	Har	Tim 6566	W	8.00	43.0	B	Tim 6566	Tut	Ros	Tim	6550			
Union City FW.	2975	163 1/2	36x5	36x10	Own TW	4-4 1/2x6	32-4 L	PC	Non	Own	Zen	V	Eis	Wis	D. Ful																	



1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398	2399	2400	2401	2402	2403	2404	2405	2406	2407	2408	2409	2410	2411	2412	2413	2414	2415	2416	2417	2418	2419	2420	2421	2422	2423	2424	2425	2426	2427	2428	2429	2430	2431	2432	2433	2434	2435	2436	2437	2438	2439	2440	2441	2442	2443	2444	2445	2446	2447	2448	2449	2450	2451	2452	2453	2454	2455	2456	2457	2458	2459	2460	2461	2462	2463	2464	2465	2466	2467	2468	2469	2470	2471	2472	2473	2474	2475	2476	2477	2478	2479	2480	2481	2482	2483	2484	2485	2486	2487	2488	2489	2490	2491	2492	2493	2494	2495	2496	2497	2498	2499	2500	2501	2502	2503	2504	2505	2506	2507	2508	2509	2510	2511	2512	2513	2514	2515	2516	2517	2518	2519	2520	2521	2522	2523	2524	2525	2526	2527	2528	2529	2530	2531	2532	2533	2534	2535	2536	2537	2538	2539	2540	2541	2542	2543	2544	2545	2546	2547	2548	2549	2550	2551	2552	2553	2554	2555	2556	2557	2558	2559	2560	2561	2562	2563	2564	2565	2566	2567	2568	2569	2570	2571	2572	2573	2574	2575	2576	2577	2578	2579	2580	2581	2582	2583	2584	2585	2586	2587	2588	2589	2590	2591	2592	2593	2594	2595	2596	2597	2598	2599	2600	2601	2602	2603	2604	2605	2606	2607	2608	2609	2610	2611	2612	2613	2614	2615	2616	2617	2618	2619	2620	2621	2622	2623	2624	2625	2626	2627	2628	2629	2630	2631	2632	2633	2634	2635	2636	2637	2638	2639	2640	2641	2642	2643	2644	2645	2646	2647	2648	2649	2650	2651	2652	2653	2654	2655	2656	2657	2658	2659	2660	2661	2662	2663	2664	2665	2666	2667	2668	2669	2670	2671	2672	2673	2674	2675	2676	2677	2678	2679	2680	2681	2682	2683	2684	2685	2686	2687	2688	2689	2690	2691	2692	2693	2694	2695	2696	2697	2698	2699	2700	2701	2702	2703	2704	2705	2706	2707	2708	2709	2710	2711	2712	2713	2714	2715	2716	2717	2718	2719	2720	2721	2722	2723	2724	2725	2726	2727	2728	2729	2730	2731	2732	2733	2734	2735	2736	2737	2738	2739	2740	2741	2742	2743	2744	2745	2746	2747	2748	2749	2750	2751	2752	2753	2754	2755	2756	2757	2758	2759	2760	2761	2762	2763	2764	2765	2766	2767	2768	2769	2770	2771	2772	2773	2774	2775	2776	2777	2778	2779	2780	2781	2782	2783	2784	2785	2786	2787	2788	2789	2790	2791	2792	2793	2794	2795	2796	2797	2798	2799	2800	2801	2802	2803	2804	2805	2806	2807	2808	2809	2810	2811	2812	2813	2814	2815	2816	2817	2818	2819	2820	2821	2822	2823	2824	2825	2826	2827	2828	2829	2830	2831	2832	2833	2834	2835	2836	2837	2838	2839	2840	2841	2842	2843	2844	2845	2846	2847	2848	2849	2850	2851	2852	2853	2854	2855	2856	2857	2858	2859	2860	2861	2862	2863	2864	2865	2866	2867	2868	2869	2870	2871	2872	2873	2874	2875	2876	2877	2878	2879	2880	2881	2882	2883	2884	2885	2886	2887	2888	2889	2890	2891	2892	2893	2894	2895	2896	2897	2898	2899	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Key of abbreviations, page 37

[illegible]



**5½ Ton and Over**

[illegible]



# Gasoline Tractor-Trucks—Continued

MAKE AND MODEL	SEATING CAPACITY	CHASSIS ONLY	CHASSIS WITH BODY	RECOMMENDED BODY ALLOWANCE	WHEELBASE	MAKE AND MODEL	NUMBER OF CYLINDERS	ENGINE	CARBURETOR MAKE	RADIATOR MAKE	ELECTRICAL SYSTEM	NORMAL SPEED	CLUTCH	GEARSET	TRANSMISSION	REAR AXLE	FRONT AXLE	TIRES AND WHEELS	TURNING RADIUS (FT.)	FLOOR HEIGHT	LENGTH	WIDTH
Ace C.....	30	6500	11500	5000	204	Con 7T	6-41/2x5 1/2	4-41/2x6	Zen	Own	USL	35	D. B-L	B-L 55	B-L 55	W	A	Tim 1550	Ros	27 1/2	316	90
Ace 118.....	18	4910	8460	180	205	Con 6B	6-31/2x5 1/2	4-41/2x6	Zen	Per	W	40	D. B-L	B-L 55	B-L 55	A	Shu	Col 5200	Ros	21 1/2	259	83 1/2
American 121.....	22	5110	9280	205	205	Con 7T	6-41/2x5 1/2	4-41/2x6	Zen	Per	W	40	D. B-L	B-L 55	B-L 55	A	Shu	Col 5200	Ros	21 1/2	259	83 1/2
American-LaFrance 4R.....	25	8700	12800	196	205	Own 4R	4-41/2x6	4-41/2x6	Zen	Own	W	27	D. B-L	B-L 55	B-L 55	B	B	Own 4R	Ros	27 1/2	276	83 1/2
American-LaFrance 4R.....	29	6100	11000	5000	221	Own 4R	4-41/2x6	4-41/2x6	Zen	Own	W	27	D. B-L	B-L 55	B-L 55	B	B	Own 4R	Ros	27 1/2	276	83 1/2
Brookway EB.....	18	3850	6350	2500	183	Wau DU	4-41/2x5 1/2	4-41/2x6	Zen	Own	W	30	D. B-L	B-L 55	B-L 55	W	A	Tim 1544B	Ros	34	316	90
Brookway EB4.....	18	4000	6400	2500	183	Wau DU	4-41/2x5 1/2	4-41/2x6	Zen	Own	W	30	D. B-L	B-L 55	B-L 55	W	A	Tim 1544B	Ros	34	316	90
Brookway H.....	22	4975	7975	3000	164	Wau DU	6-31/2x5 1/2	4-41/2x6	Zen	Own	W	40	D. B-L	B-L 55	B-L 55	A	Shu	Col 5200	Ros	21 1/2	259	83 1/2
Brookway JI.....	29	7200	11000	5000	221	Wau DU	6-41/2x5 1/2	4-41/2x6	Zen	Own	W	30	D. B-L	B-L 55	B-L 55	W	A	Tim 1544B	Ros	34	316	90
Clinton 6B8.....	30	5925	8700	2725	184	Wau DU	4-41/2x5 1/2	4-41/2x6	Zen	Own	W	30	D. B-L	B-L 55	B-L 55	W	A	Tim 1544B	Ros	34	316	90
Clinton 6B8.....	35	6600	9600	3000	220	Wau DU	4-41/2x5 1/2	4-41/2x6	Zen	Own	W	30	D. B-L	B-L 55	B-L 55	W	A	Tim 1544B	Ros	34	316	90
Commerce 65.....	25	8220	11000	3500	242	Con 14H	6-31/2x5 1/2	4-41/2x6	Zen	Own	W	40	D. B-L	B-L 55	B-L 55	W	A	Tim 1544B	Ros	34	316	90
Concord Bus.....	25	5200	7700	2500	168	Bud KBU	4-41/2x5 1/2	4-41/2x6	Zen	Own	W	30	D. B-L	B-L 55	B-L 55	W	A	Tim 1544B	Ros	34	316	90
Day-Elder 20.....	20	5000	8600	3000	180	Con 6B	6-31/2x5 1/2	4-41/2x6	Zen	Own	W	30	D. B-L	B-L 55	B-L 55	W	A	Tim 1544B	Ros	34	316	90
Day-Elder 25.....	25	5000	8600	3000	180	Con 6B	6-31/2x5 1/2	4-41/2x6	Zen	Own	W	30	D. B-L	B-L 55	B-L 55	W	A	Tim 1544B	Ros	34	316	90
Day-Elder 30.....	30	7000	10500	3500	216	Con 6B	6-41/2x5 1/2	4-41/2x6	Zen	Own	W	30	D. B-L	B-L 55	B-L 55	W	A	Tim 1544B	Ros	34	316	90
Dorrie 36.....	30	7000	10500	3500	216	Con 6B	6-41/2x5 1/2	4-41/2x6	Zen	Own	W	30	D. B-L	B-L 55	B-L 55	W	A	Tim 1544B	Ros	34	316	90
Dorrie M4 Parlor Car.....	17	4200	7700	3500	176	Own	6-41/2x5 1/2	4-41/2x6	Zen	Own	W	30	D. B-L	B-L 55	B-L 55	W	A	Tim 1544B	Ros	34	316	90
Dorrie L6 (gas elec.).....	25	6475	11000	4500	224	Own	6-41/2x5 1/2	4-41/2x6	Zen	Own	W	30	D. B-L	B-L 55	B-L 55	W	A	Tim 1544B	Ros	34	316	90
Dorrie L6 (gas elec.).....	29	7875	12875	4500	224	Own	6-41/2x5 1/2	4-41/2x6	Zen	Own	W	30	D. B-L	B-L 55	B-L 55	W	A	Tim 1544B	Ros	34	316	90
Dorrie M6 Parlor Car.....	21	5100	9075	3500	190	Own	6-41/2x5 1/2	4-41/2x6	Zen	Own	W	30	D. B-L	B-L 55	B-L 55	W	A	Tim 1544B	Ros	34	316	90

# Motor Bus Chassis Specifications

For Other Chassis Which Are Recommended and Adaptable for Bus Use, See Models Having Sign (\$) in the "COMMERCIAL CAR SPECIFICATIONS"

Key of abbreviations, page 37

MAKE AND MODEL	GENERAL			ENGINE		ELECTRICAL SYSTEM			Normal Speed	TRANSMISSION		REAR AXLE		FRONT AXLE		TIRES AND WHEELS			DIMENSIONS (In.)											
	WEIGHT			Make and Model	Number of Cylinders	Bore and Stroke	Radiator Make	Carburetor Make		Ignition System Make			Voltage and Amp. Hr. Cap.	High M. P. H.	Low M. P. H.	CLUTCH	GEARSET		Make and Model	Final Drive	Brake Location	TIRES (In.)			Turning Radius (Ft.)	Floor Height	Length	Width		
	Seating Capacity	Chassis Only	Chassis with Body							Recommended Body Allowance	Wheelbase	Make					Generator and Starter	Battery				Type and Make	Make and Model	Number of Forward Speeds					Universal Make	Front
Ace C.....	30	6500	11500	5000	204	Con 7T	6-41½x5½	Own	Zen	Eis	RBo	USL	12-110	35	6.0	D. B-L	B-L 55	4	Pet	Tim 6516	W	A	Tim 1550	Ros	36x6	DP 36x6	Bud	316	27½	34
Ace 116.....	18	4910	8460	180	205	Con 6B	6-3½x5	Per	Zen	Eis	Bos	Wil	6-153	40	.....	D. B-L	B-L 51	4	Bto	Chla 16000	B	A	Shu	Ros	32x6	DP 32x6	Mot	259	21½	.....
Ace 121.....	22	5110	9280	205	205	Con 7T	6-4½x5½	Per	Zen	Bos	RBo	Wil	6-153	45	.....	D. B-L	B-L 55	4	Bto	Chla 16000	B	A	Shu	Ros	32x6	DP 32x6	Mot	276	21½	.....
American-LaFrance 4R.....	25	8700	12800	196	205	Own 4R	4-4½x6	Own	Zen	Bos	N-E	Wil	12-140	27	6.0	D. Own	Own	4R	Own 4R	Chla 1720	R	B	Own 4R	Own	33x7	DP 33x7	Bud	328	27	32
American-LaFrance 4R.....	29	6100	11000	5000	226	Own 4R	4-4½x6	Own	Zen	Bos	N-E	Wil	12-140	27	6.0	D. Own	Own	4R	Own 4R	Chla 1720	R	B	Own 4R	Own	33x7	DP 33x7	Bud	328	27	32
Brookway EB.....	18	3850	6350	2500	183	Wis ST	4-4½	G&O	Zen	Eis	L-N	Exi	12-220	42	10.0	D. B-L	B-L 30	3	Spi	Col 53000	B	A	Col 5200	Gem	32x6	P 34x7	Van	243	28½	28
Brookway EB4.....	18	4000	6400	2500	183	Wis 6B	6-4½x5	G&O	Zen	Eis	L-N	Exi	12-220	42	8.5	D. B-L	B-L 30	3	Spi	Col 53000	B	A	Col 5200	Gem	32x6	DS 30x5	Van	243	28½	28
Brookway H.....	22	4975	7975	3000	164	Wis 6B	6-4½x5	G&O	Zen	Eis	L-N	Exi	12-220	42	8.5	D. B-L	B-L 30	3	Spi	Col 53000	B	A	Col 5200	Gem	32x6	DS 30x5	Van	243	28½	28
Brookway JI.....	29	7200	11000	5000	221	Wis H	6-4½	G&O	Zen	Eis	L-N	Exi	12-220	40	6.5	D. B-L	B-L 55	4	Spi	Wls 6700	I	...	She D445	Ros	34x7	DS 34x7	Bud	344	26	32
Clinton 6B8.....	30	5925	8700	2725	184	Wau CU	4-4½x5½	Own	Zen	Bos	Bos	Pol	6-180	30	3.0	D. B-L	B-L 55	4	Bto	Tim 6566	W	A	Tim 1544B	Ros	36x6	DP 36x6	Bud	37	20	37
Clinton 6B8S.....	35	6600	9600	3000	220	Wau DU	4-1½x6½	Own	Zen	Bos	Bos	Pol	6-180	30	3.0	D. B-L	B-L 55	4	Bto	Tim 6566	W	A	Tim 1550	Ros	36x6	DP 36x6	Bud	37	20	40
Commerce 60.....	25	8220	11000	3500	229	Con 6B	6-3½x5½	Lon	Zen	Bos	Bos	Wil	6-153	35	6.0	D. B-L	B-L 55	4	Bto	Tim 6516	W	A	Tim 1550	Ros	36x6	DP 36x6	Bud	340	20½	20½
Commerce 65.....	25	8220	11000	3500	242	Con 14H	6-4½x5½	Fel	Zen	Bos	Bos	Wil	12-153	35	5.0	D. B-L	B-L 60H	4	Bto	Tim 6516	W	A	Tim 1550	Ros	36x6	DP 36x6	Bud	340	20½	20½
Concord Bus.....	25	5200	7700	2500	168	Bud KBU	6-4½x5½	Bud	Zen	Eis	L-N	Exi	12-220	40	7.0	D. B-L	B-L 51	4	Bto	Tim 6571S	W	A	Shu 5550B	Ros	32x6	DP 32x6	Bud	338	28	38
Day-Elder 20.....	20	5000	8600	3000	180	Con 6B	6-3½x5	Bud	Zen	Eis	Bos	Wil	6-153	35	10.0	D. B-L	B-L 51	4	Spi	Tim 6462	W	A	Shu 1526	Gem	38x7	DP 38x7	Van	279	30	32
Day-Elder 25.....	25	5000	8600	3000	180	Con 6B	6-3½x5	Bud	Zen	Eis	Bos	Wil	6-153	35	7.0	D. B-L	B-L 51	4	Spi	Tim 6462	W	A	Shu 1526	Gem	38x7	DP 38x7	Van	279	30	32
Day-Elder 30.....	30	7000	10500	3500	196	Con 6B	6-4½x5½	Bud	Zen	Eis	L-N	Exi	12-153	35	7.0	D. B-L	B-L 51	4	Spi	Tim 6462	W	A	Shu 1526	Gem	38x7	DP 38x7	Van	279	30	32
Dorrie 36.....	30	7000	10500	3500	216	Con 6B	6-4½x5½	Bud	Zen	Eis	L-N	Exi	12-153	35	7.0	D. B-L	B-L 51	4	Spi	Tim 6462	W	A	Shu 1526	Gem	38x7	DP 38x7	Van	279	30	32
Dorrie M4 Parlor Car.....	17	4200	7700	3500	176	Own	6-3½x5½	Mod	Zen	RBo	Bos	Wil	12-153	30	5.0	D. Ful	Ful GU14	4	Bto	Huck 85	R	A	She D445	Gem	36x6	P 36x6	Bud	30	25	27
Dorrie M4 Parlor Car.....	30	7000	10500	3500	216	Own	6-3½x5½	Mod	Zen	RBo	Bos	Wil	12-153	35	5.0	D. B-L	B-L 51	4	Bto	Huck 85	R	A	She D445	Gem	36x6	P 36x6	Bud	30	25	27
Dorrie L6 (gas elec.).....	25	6475	11000	4500	224	Own	6-4½	Mod	Str	Bos	N-E	Wil	12-153	35	5.0	D. B-L	B-L 55	4	Spi	Wia DR	R	B	Tim 1560	Ros	36x6	DP 36x6	Bud	34	21	34
Dorrie L6 (gas elec.).....	29	7875	12875	4500	224	Own	6-4½	Mod	Str	Bos	N-E	Wil	12-153	35	5.0	D. B-L	B-L 55	4	Spi	Wia DR	R	B	Tim 1560	Ros	36x6	DP 36x6	Bud	34	21	34
Dorrie M6 Parlor Car.....	21	5100	9075	3500	190	Own	6-4½	Mod	Str	Bos	Bos	Wil	6-130	35	5.0	D. B-L	B-L 51	4	Spi	Wia DR	R	B	Tim 1473	Ros	32x6	DP 32x6	Bud	36	23	36

Faded Parlor Car.	26	6770	10550	.....	230	Has 75	6-4x5 1/2	Lon	Zen	Del	USL	12-118	35	7.0	D. B-L	B-L 55	4 Spl	Tim 65190	W	A	Tim 1550	Ros	P 36x6	DP 36x6	Bud	342	89
Faded Street Car.	27	6480	10000	.....	218	Has 80	6-4x5 1/2	Mod	Zen	Del	USL	12-118	35	7.0	D. B-L	B-L 55	4 Spl	Tim 65190	W	A	Tim 1524	Ros	P 36x6	DP 36x6	Bud	38	89
Federal.	28	5460	2600	1910	2500	Has 80	6-4x5 1/2	Mod	Zen	Del	USL	6-185	35	6.0	B. & B	Det R400	4 Spl	Tim 6566	W	A	Tim 1524	Ros	P 32x6	DP 32x6	Bud	28	30
Fifth Ave. J.	29	5850	8530	2780	172	Yell EZ	4-4x6	Own	Zen	Del	USL	12-40	27	7.5	P. Own	Own J	4 Spl	Tim 6412	W	B	Tim 1523	Ros	P 36x6	DP 36x6	Bud	33	297
Fifth Ave. L.	30	6850	12040	5160	174	Yell EZ	4-4x6	Own	Zen	Del	USL	12-40	27	7.5	P. Own	Own J	4 Spl	Tim 6412	W	B	Tim 1523	Ros	P 36x6	DP 36x6	Bud	33	297
	31	6500	9900	3400	187	Bud Bus	6-4x5 1/2	Own	Str	Rem	WIL	6-190	35	5.0	D. Own	Own 51D	8 Spl	Tim 6516	W	A	Tim 1550	Ros	P 36x6	DP 36x6	Day	205	91
Garford 51D	21	3300	6000	4400	180	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1473H	Lav	S 34x7	Day	28	23	
Garford KB.	22	6900	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gary 45B.	23	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gary 45B.	24	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	25	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	26	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	27	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	28	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	29	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	30	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	31	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	32	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	33	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	34	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	35	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	36	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	37	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	38	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	39	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	40	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	41	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	42	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	43	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	44	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	45	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	46	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	47	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	48	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	49	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	50	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	51	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	52	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	53	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	54	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	55	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	56	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	57	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	58	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	59	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	60	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	61	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	62	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	63	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	64	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	65	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	66	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon	Zen	Del	USL	6-135	35	7.1	D. B-L	B-L 31	3 U-M	Tim 5620H	W	E	Tim 1560C	Ros	S 36x6	DP 36x6	Bud	35	23
Gottfried 60B-2	67	6800	11300	4400	220	Wis Z	6-3x5 1/2	Lon																			



# KEY OF ABBREVIATIONS

## Wheelbase:

- \*—More than one wheelbase furnished.

## Tires:

- B—Balloon.
- P—Pneumatics standard equipment.
- S—Solids.
- DP—Dual pneumatics standard equipment.
- DS—Dual solids.
- † This sign after tire size indicates that pneumatics can be furnished at extra cost.

## Engine:

- Bud—Buda Co., Harvey, Ill.
- Con—Continental M. Corp., Detroit, Mich.
- D—Head and Side.
- FP—Full Pressure to all bearings including wrist pins.
- H—Overhead.
- Has—Hall-Scott Motor Car Co., Berkeley, Cal.
- Her—Hercules Motors Corp., Canton, Ohio.
- Himco—Hinkley Motors, Inc., Detroit, Mich.
- Hin—Hinkley Motors, Inc., Detroit, Mich.
- I—In Head.
- Jackson—Master Motor Truck Mfg. Co., Chicago, Ill.
- Kni—Yellow Sleeve Valve Eng. Works, East Moline, Ill.
- L—L Head.
- Lyc—Lycoming M. Corp., Williamsport, Pa.
- Overland—Willys-Overland Co., Toledo, O.
- PC—Pressure to all crankshaft and connecting-rod bearings.
- PS—Pressure with splash.
- SP—Circulating splash.
- T—T Head.
- Wau—Waukesha M. Co., Waukesha, Wis.
- Wis—Wisconsin M. Mfg. Co., Milwaukee, Wis.
- Yell—Yellow Sleeve V. E. Works, E. Moline, Ill.
- X—Sleeve.

## Governor:

- Con—Continental M. Corp., Detroit, Mich.
- Dup—Eisemann Magneto Corp., New York.
- Han—Handy Gov. Co., Detroit, Mich.
- Hin—Hinkley Motors, Inc., Detroit, Mich.
- K. P.—K. P. Products Co., New York, N. Y.
- McC—E. R. Klemm, Chicago, Ill.
- Mon—Monarch Gov. Co., Detroit, Mich.
- Non—Not Supplied.
- Pha—Pharo Mfg. Co., Bethlehem, Pa.
- Pie—Pierce Governor Co., Anderson, Ind.
- Sim—Eisemann Magneto Corp., New York.
- Tac—Tractor Appliance Co., New Holstein, Wis.
- Wau—Waukesha M. Co., Waukesha, Wis.

## Radiator:

- Bud—Bush Mfg. Co., Hartford, Conn.
- Chi—Chicago Mfg. Co., Chicago, Ill.
- E-M—English & Mersick Co., New Haven, Conn.
- Fed—Feddars Mfg. Co., Buffalo, N. Y.
- Fle—Flexo Mfg. Co., Los Angeles, Cal.
- G&O—G. & O. Mfg. Co., New Haven, Conn.
- Har—Harrison Rad. Corp., Lockport, N. Y.
- Idl—Ideal Sheet Metal Works, Chicago, Ill.
- Liv—Livingston Rad. Corp., Plainfield, N. J.
- Lon—Long Mfg. Co., Detroit, Mich.
- McC—McCord Rad. & Mfg. Co., Detroit, Mich.
- McK—McKinnon Dash Co., Buffalo, N. Y.
- Mod—Modine Mfg. Co., Racine, Wis.
- Per—Racine Radiator Co., Racine, Wis.
- R-T—Rome-Turney Rad. Co., Rome, N. Y.
- Spa—Sparks-Withington Co., Jackson, Mich.
- Stn—Standard Radiator Co., Inc., Springfield, N. Y.
- U. S.—U. S. Cartridge Co., Lowell, Mass.

## Full System:

- B.B.—Penberthy Injector Co., Detroit, Mich.
- Car—Carter Carburetor Co., St. Louis, Mo.
- Ens—Ensign Car. Co., Los Angeles, Cal.
- G—Gravity.
- Hol—Holley Carburetor Co., Detroit, Mich.
- Joh—Johnson Co., Detroit, Mich.
- Mar—Marvel Carburetor Co., Flint, Mich.
- P—Pressure.
- Ray—Bencke Mfg. Co., Chicago, Ill.
- Sch—Wheeler Schebler Carburetor Co., Indianapolis, Ind.
- Ste—Detroit Lubricator Co., Detroit, Mich.
- Str—Stromberg Motor Devices Co., Chicago, Ill.
- Til—Tillotson Mfg. Co., Toledo, Ohio.
- V—Vacuum.
- Zen—Zenith-Detroit Corp., Detroit, Mich.

## Electrical Systems:

- †—Generator & Starter at Extra Cost.
- †—Starter not supplied, Generator at Extra Cost.
- \*—Starter at Extra Cost.
- A-L—Electric Auto-Lite Corp., Toledo, O.
- Alc—Cincinnati S. B. Co., Cincinnati, O.
- Apo—Apolo Magneto Corp., Kingston, N. Y.
- BiJ—Bijur Motor Appliance Co., Hoboken, N. J.
- Bos—American Bosch Magneto Co., Springfield, Mass.
- Con—Connecticut Telephone & Electric Co., Meriden, Conn.
- Del—Dayton Engin. Lab. Co., Dayton, Ohio.
- DJ—DeJohn Elec. Corp., Toledo, Ohio.
- Dyn—Owen Dyneto Corp., Syracuse, N. Y.
- Eis—Eisemann Magneto Corp., New York.
- Exi—Electric S. B. Co., Phila., Pa.
- G&D—Gray & Davis, Boston, Mass.
- Gou—Gould S. B. Co., New York.
- Hob—Hobbs Battery Co., Los Angeles, Cal.
- L-N—Leece-Neville Co., Cleveland, Ohio.
- N-E—North East Elect. Co., Rochester, N. Y.
- Non—Not Supplied.
- Pol—Prest-O-Lite Co., Indianapolis, Ind.
- Rem—Remy Electric Co., Anderson, Ind.
- RBO—Robert Bosch Magneto Co., New York, N. Y.
- Sci—Scintilla Magneto Co., Sidney, N. Y.
- Sim—Simms Magneto Co., E. Orange, N. J.
- USL—U. S. Light & Heat Corp., Niagara Falls, N. Y.
- Ves—Vesta Battery Corp., Chicago, Ill.
- Wes—Westinghouse Elec. & Mfg. Co., Springfield, Mass.
- Wil—Willard S. B. Co., Cleveland, Ohio.

## Clutch and Gearset:

- \*—Other ratios optional.
- A—Amidships.
- B & B—Borg & Beck Co., Chicago, Ill.
- B-L—Brown-Lipe Gear Co., Syracuse, N. Y.
- Cot—Cotta Trans. Corp., Rockford, Ill.
- Cov—Covert Gear Co., Lockport, N. Y.
- Det—A. J. Detlaiff Co., Detroit, Mich.
- D-G—Detroit Gear & Machine Co., Detroit, Mich.
- Dod—Dodge Brothers Co., Detroit, Mich.
- D—Disk.
- Dur—Durston Gear Corp., Syracuse, N. Y.
- Ful—Fuller & Sons Mfg. Co., Kalamazoo, Mich.
- H-S—Hele-Shaw, Merchant & Evans Co., Philadelphia, Pa.
- Hoo—Hoosier Clutch Co., Muncie, Ind.
- J—Unit with Jackshaft.
- K—Cone.
- Lon—Long Mfg. Co., Detroit, Mich.
- M-E—Merchant & Evans Co., Phila., Pa.
- M. M.—Mechanics Mach. Co., Rockford, Ill.
- Mun—Muncie Gear Works, Muncie, Ind.
- O—Disk in Oil.
- P—Plate.
- R—Rear Axle.
- Roc—Rockford Drilling Machine Co., Rockford, Ill.
- S—Separate Unit.
- U—Unit with Engine.
- W-G—Warner Gear Co., Muncie, Ind.

## Universal:

- B.G.—Universal Machine Co., Bowling Green, Ohio.
- Blo—Blood-Bros. Mach. Co., Allegan, Mich.
- Det—Universal Products Co., Detroit, Mich.
- Har—Spicer Mfg. Co., S. Plainfield, N. J.
- M-E—Merchant & Evans Co., Phila., Pa.
- M. M.—Mechanics Machine Co., Rockford, Ill.
- Pet—Cleveland Universal Parts Co., Cleveland, Ohio.
- Pic—Carl Pick Co., West Bend, Wis.
- Sne—Spicer Mfg. Corp., S. Plainfield, N. J.
- SpI—Spicer Mfg. Co., S. Plainfield, N. J.
- The—Thermoid Rubber Co., Trenton, N. J.
- Thei—Almetal Universal Joint Co., Cleveland, Ohio.
- U-M—Universal Machine Co., Bowling Green, Ohio.
- U-P—Universal Products Co., Detroit, Mich.

## Front and Rear Axles:

- 1/2—Semi-Floating.
- 3/4—Three-Quarter Floating.
- B—Straight Bevel.
- Clc—Clark Equip. Co., Buchanan, Mich.
- Col—Columbia Axle Co., Cleveland, Ohio.
- Con—Continental Axle Co., Edgerton, Wis.
- C—Chain.
- D—Dead.
- Eat—Eaton Axle Co., Cleveland, Ohio.
- F—Floating.
- I—Internal Gear.
- P—Spur Gear.
- R—Double Reduction.
- Rus—Russel Motor Axle Co., Detroit, Mich.
- S—Spiral Bevel.
- Sal—Sallsbury Axle Co., Jamestown, N. Y.

- She—Sheldon Axle & Spring Co., Wilkes-Barre, Pa.
- Shu—Shuler Axle Co., Inc., Louisville, Ky.
- Std—Standard Parts Co., Cleveland, Ohio.
- Tim—Timken Det. Axle Co., Detroit, Mich.
- Tor—Eaton Axle & Spring Co., Cleveland, Ohio.
- Vul—Vulcan Motor Axle Co.
- Wal—Walker Axle Co., Chicago, Ill.
- W—Worm.
- Wis—Wisconsin Parts Co., Oshkosh, Wis.

## Brake:

- A—Rear Wheels only.
- B—Drive Shaft and Rear Wheels.
- C—6 Wheel Brakes.
- D—Jackshaft and Rear Wheels.
- E—4 Wheel Brakes.

## Springs:

- Amc—American Autoparts Co., Detroit, Mich.
- Arm—General Motors Co., Pontiac, Mich.
- Bea—Eaton Spring Corp., Detroit, Mich. & Massillon, O.
- Bet—Betts Bros. Sp. Co., Inc., San Francisco, Cal.
- Cha—Champion Auto Sp. Co., St. Louis, Mo.
- Del—D. Delany & Son, Newark, N. J.
- Det—Detroit Steel Prod. Co., Detroit, Mich.
- G-C—Garden City Sp. Works, Chicago, Ill.
- Har—Harvey Sp. & Forging Co., Racine, Wis.
- I. C.—Iron City Sp. Co., Pittsburgh, Pa.
- Lah—Laher Auto Spring Co., Portland, Ore.
- Mar—Maremont Mfg. Co., Chicago, Ill.
- Mat—Mather Spring Co., Toledo, Ohio.
- Mer—E. R. Merrill Spring Co., New York.
- Pen—Penn Sp. Works, Baldwinville, N. Y.
- Per—Eaton Bum. & Sp. Co., Cleveland, O.
- Row—William & Harvey Rowland, Phila., Pa.
- She—Sheldon Axle & Sp. Co., Wilkes-Barre, Pa.
- S. P.—Spring Perch Co., Stratford, Conn.
- S. S.—Standard Steel Sp. Co., Corapolis, Pa.
- Tem—Temme Spring Corp., Chicago, Ill.
- Tut—Tuthill Sp. Co., Chicago, Ill.
- U. S.—United States Sp. Co., Los Angeles, Cal.

## Steering Gear:

- CAS—C. A. S. Products Co., Columbus, O.
- D-G—Detroit Gear & Machine Co., Detroit, Mich.
- Dod—Dodge Bros. Co., Detroit, Mich.
- Gem—Gemmer Mfg. Co., Detroit, Mich.
- Han—Hannum Mfg. Co., Milwaukee, Wis.
- Jac—Saginaw Products Co., Saginaw, Mich.
- Lav—Hannum Mfg. Co., Milwaukee, Wis.
- Ros—Ross Gear & Tool Co., Lafayette, Ind.
- Woh—Wohlrab Gear Co., Racine, Wis.

## Wheels:

- Are—Archibald Wheel Co., Lawrence, Mass.
- A-W—Auto Wheel Co., Lansing, Mich.
- Bet—Bethlehem Steel Co., Bethlehem, Pa.
- Bim—Bimel Spoke & Auto Wheel Co., Portland, Ind.
- Bud—Budd Wheel Co., Phila., Pa.
- Clc—Clark Equip. Co., Buchanan, Mich.
- Day—The Dayton Steel Foundry Co., Dayton, Ohio.
- Dis—Motor Wheel Corp., Lansing, Mich.
- Hay—Hayes Wheel Co., Jackson, Mich.
- Hoo—Hoopes, Bro. & Darlington, Inc., West Chester, Pa.
- Ind—Indestructible Wheel Co., Lebanon, Ind.
- Int—Interstate Foundry Co., Chicago, Ill.
- Jon—Phineas Jones & Co., Hillside, N. J.
- Kel—Kelsey Wheel Co., Detroit, Mich.
- M-M—Michigan Malleable Iron Co., Detroit.
- Mot—Motor Wheel Corp., Lansing, Mich.
- Mun—Muncie Wheel Co., Muncie, Ind.
- Nor—Northern Wheel Corp., Alma, Mich.
- Pru—Prudden Wheel Co., Lansing, Mich.
- Roy—Royer Wheel Co., Aurora, Ind.
- Sch—St. Marys Wheel & Spoke Co., St. Marys, Ohio.
- Smi—Smith Wheel, Inc., Syracuse, N. Y.
- StM—St. Marys Wheel Co., St. Marys, O.
- Std—Standard Wheel Co., Terre Haute, Ind.
- Van—Van Wheel Corp., Onelda, N. Y.
- Way—Wayne Wheel Co., Newark, N. Y.

## Rim Equipment:

- Cle—Cleveland Welding & Mfg. Co. of the Hydraulic Steel Co., Cleveland, Ohio.
- Fir—Firestone Steel Prod. Co., Akron, O.
- Gdy—Goodwear Tire & Rub. Co., Akron, O.
- Hay—Hayes Wheel Co., Jackson, Mich.
- Jax—Jaxon Steel Prod. Co., Jackson, Mich.
- Kel—Kelsey Wheel Co., Detroit, Mich.
- Non—None Supplied.

# Electric Commercial Cars

Name and Model Number	Total Weight Resting on Four Tires	Chassis Weight—Exclusive of Battery	Minimum Load Capacity	Maximum Load Capacity	Chassis Price	Maximum Speed	Location of Battery	Mileage Per Charge	Motor	Controller	Speeds Forward	Drive	Rear Axle	Spring	Front Tires	Rear Tires	Steering Gear	Wheelbase	Per Cent of Weight on Rear Wheels
Autocar E 1F	10000	3650			2400		A		G-E	G-E	5	R	Own	Row	S 34x4	S 34x5	Ros	107	60
Autocar E 2D	15000	4300			2800		A		G-E	G-E	5	R	Own	Row	S 34x5	S 34x6	Ros	120	60
Autocar E 3H	18000	4900			3200		A		G-E	G-E	5	R	Own	Row	S 34x5	S 36x8	Ros	131	60
Autocar E 4Y	26000	6800			4000		A		G-E	G-E	5	R	Own	Row	S 34x6	DS36x6	Ros	138	60
Autocar E 5M	30000	7200			4300		A		G-E	G-E	5	R	Own	Row	S 36x7	DS36x7	Ros	138	60
C-T-H1	5600	2400				14	A	55	G-E	Own	4	Own	F	She	S 36x3½	S 36x4	W	108	67
C-T F-1.5	6600	2800				14	A	60	G-E	Own	4	Own	F	She	S 36x3½	S 36x4	W	94	67
C-T H-1.5	6600	2800				14	A	60	G-E	Own	4	Own	F	She	S 36x3½	S 36x4	W	116	67
C-T F-2	8000	3100				14	A	50	G-E	Own	4	Own	F	She	S 36x3½	S 36x5	W	96	67
C-T H-2	8000	3100				14	A	50	G-E	Own	4	Own	F	She	S 36x3½	S 36x5	W	124	67
C-T F-4	11950	4200				12	A	50	G-E	Own	4	Own	F	She	S 36x4	DS36x4	W	116	67
C-T A-7	17700	5800				11	A	45	G-E	Own	4	I	D	She	S 36x6	DS36x4	W	122	58
C-T F-7	17600	6000				11	A	45	G-E	Own	4	Own	F	She	S 36x5	DS36x5	W	136	67
C-T A-10	22250	6500				10	A	45	G-E	Own	4	I	D	She	S 36x7	DS36x5	W	132	58
C-T F-10	22750	7000				10	A	45	G-E	Own	4	Own	F	She	S 36x6	DS36x6	W	152	67
Electruck 48	8700	3600	2000	3000	2000	15	A	50	G-E	G-E	4	C	Own	Eat	S 34x4	S 34x5	Ros	112	60
Electruck 39	10400	4200	4000	5000	2500	15	A	50	G-E	G-E	4	C	Own	Eat	S 34x4	S 34x6	Gem	122	60
Electruck 27	32000	12200	15000	20000	6000	12	A	50	G-E	Own	5	C	Own	Eat	S 36x7	S 40x14	Gem	168	70
Milburn 43	3790	1690	1000	1500	1585	17	H	50	G-E	Own	4	W	She	She	P 32x4½	P 32x4½	Ros	115	60
O. B-B						13			G-E	Own		C	D		S 36x4	DS36x3½	Own	107	
O. B-C						11			G-E	Own		C	D		S 36x5	DS36x4	Own	135	
O. B-D						10			G-E	Own		C	D		S 36x6	DS36x5	Own	143	
Steinmetz 15	6800	2200	1000	2250	1800	18	H&S	60	Own	Own	4	R	Own	Lig	P 32x4½	P 32x4½	Lav	114	55
Walker 12		1900				15	H&S	50	G-E	Own	4		Tim	Det	S 36x3½	S 36x3½	Ros	104	66
Walker 18		3000				14	A	50	Wes	Own	5	Own	Own	Mat	S 34x3	S 36x4	Ros	94	66
Walker 24		3200				13	A	50	Wes	Own	5	Own	Own	Mat	S 34x3½	S 36x5	Ros	101	66
Walker 42		4200				13	A	50	Wes	Own	5	Own	Own	Mat	S 36x4	S 36x6	Ros	114	66
Walker 60		6500				11	A	40	G-E	Own	5	Own	Own	Mat	S 36x5	DS40x5	Ros	131	66
Walker 70		7200				10	A	40	G-E	Own	5	Own	Own	Mat	S 26x6	DS40x6	Ros	141	66
Ward A211	4650	1800	600	1150		15		75	G-E	Own	4	W	She	She	S 32x3	S 32x3½	Own	88	56
Ward B-222	6000	2300	1020	1700		14		84	G-E	Own	4	W	She	She	S 32x3½	S 32x4	Own	91	62
Ward C-211	8000	2670	2170	2880		13		65	G-E	Own	4	W	She	She	S 32x3½	S 34x5	Own	96	64
Ward E-211	12000	3570	4290	5430		12½		56½	G-E	Own	4	W	She	She	S 34x4	S 36x6	Own	108	65
Ward G-211	16000	4500	6180	7760		11		44	G-E	Own	5	W	She	She	S 36x5	S 36x8	Own	120	68
Ward J-211	22500	6630	9500	11200		10		39½	G-E	Own	5	W	She	She	S 36x6	S 36x10	Own	136	70
Ward M-211	30000	8430	13780	15920		9		36	G-E	Own	5	W	She	She	S 36x7	DS36x7	Own	152	71

NOTE: Battery Equipment on all above makes is at the option of the purchaser. Battery Location Abbreviations: A-amidships; H-under hood; and S-under seat

## Eliminates Red Ink Service

(Continued from page 24)

The same department also contains a metal and tinsmith equipment. It may be thought that this involves a heavy investment and overhead but all service work can be done under the one roof.

Occasionally trucks are taken in trade which from a sales point of view is junk. But in the majority of cases there are certain components of units which by a little attention in the machine shop are serviceable to that type of customer whose truck is not worth a complete new unit and who desires to get a little more service. The junk chassis is disassembled and the components carefully inspected. Those that will give reasonable service are saved. These, however, are sold at a low price and the customer distinctly understands it is an emergency service. In this manner an owner of an old truck is enabled to obtain more miles at a low cost. Such a policy would not be practical, perhaps, with some shops but handled as it is with the Carpenter organization it has proven a builder of good will and service. No effort is made to merchandise these parts for new and genuine parts are always advocated.

Another innovation is the policy to assist the customer get the last mile of service from his truck. This is termed the constructive policy. If, for example, the motor is "shot" and the balance of the chassis units in good condition, a motor will be fitted to the chassis even to the extent of making special hangers

or arms for supports. It may also involve changing the location of the steering gear assembly. With equipment and men to do this work the cost to the customer is surprisingly low. Thus it will be seen that the service policy is not to load the old customer with a new truck but to endeavor to assist him in getting the last dollar of value from his old machine. It may be argued that this is not helpful to the new truck sales department but it is because when the customer is told he needs a new truck he believes it so sales are built—and more of them than by the conventional methods.

All customers are met by Alberty who goes over the work or inspects the truck. If work other than that is needed, effort is made to sell. Many owners bring in the truck with the order to do whatever is necessary, an unusual thing for a service station. It shows that those giving such orders have confidence, and display wisdom for anticipating costly repair bills by minor adjustments and attention is real economy.

Another unusual angle to this service station is the fact that every bill for service work must have the okay of Carpenter. His explanation is that he wants to know what was done so that should the customer call up and desire information or make a protest he, Carpenter, will know what he is talking about. From this it will be deduced that Carpenter is a busy man, and also he keeps in touch with his business. He does. He says one has to in the truck business these days and must work hard to get by.

## Display Equipment

(Continued from page 15)

ments of the silent salesman. He makes an inquiry of the floor salesman and then there is a piece of equipment to deliver.

Many dealers handling larger items of equipment make the mistake of placing it on display in some other room, or back of the display shelves containing the small items. Let us remember in this regard that the average purchaser comes in to purchase items he requires urgently in order to turn out a repair job. He knows what he wants. Rarely does he come in and without a moment's hesitation purchase a drill press running around eighty or more dollars.

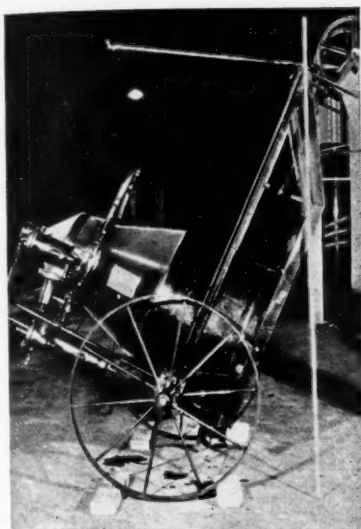
Therefore it would seem out of place for a salesman to stand before the customer of small items and call to him, "You need a drill press! Here is a drill press! Now buy a drill press!" Such tactics would eventually drive him away. But that is just what the display window is doing. It begins its hammering on the customer before he gets within the store and keeps it up until that customer leaves.

On the other hand, if such equipment is out of sight of the customers and in some other room where only purchasers of such equipment ever venture some such sales tactics on the main sales floor must be restored to. There must be some means whereby the desire is created within the customer. The direct appeal of the goods is the most effective.



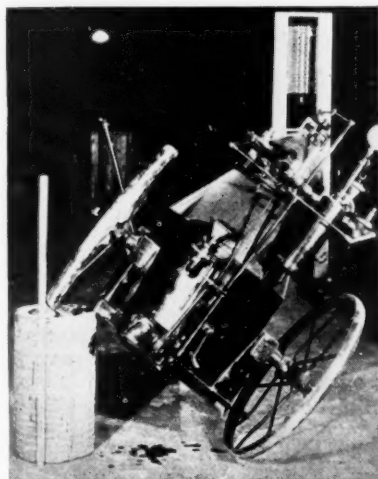
## Rego Portable Gas Generator

The Rego type "PA" portable acetylene generator has been approved by the Underwriters' Laboratories, according to announcement of the Bastian-Blessing



Raised 66 in. without upsetting

Co., manufacturers, of Chicago. Tests undergone before approval by the insurance authorities included one for stability in which one wheel was raised 21 in. without tipping and a backward tilt



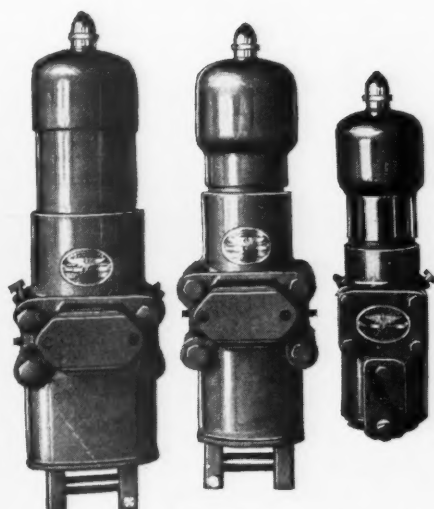
Proving stability by raising one wheel 21 inches

given by raising the front of the truck 66 in. without upsetting. Throwing the generator on its side while producing was another test successfully passed by the Rego generator.

## Westinghouse "Transit" Air Springs

A line of air springs designed for heavy buses and trucks has been added to the family of air shock absorbers manufactured by the Westinghouse Air Spring Co., New Haven, Conn.

The "Transit" model is applicable to buses and trucks having a maximum weight on the front wheels of 8000 lb. The "Stage" model is for vehicles with a



Three new Westinghouse air springs for buses and trucks

weight of 5000 lb. on the front wheels and the "Highway" for front wheel loads of 3500 lb.

Saving of weight has been given special attention in the design. The Transit model with a 4½ in. cylinder weighs only 65 lbs.

## Milburn Paint Spray

The Milburn Paint Spray is a self-contained type of spray device for the application of paint or varnish by use of compressed air. The paint enters a



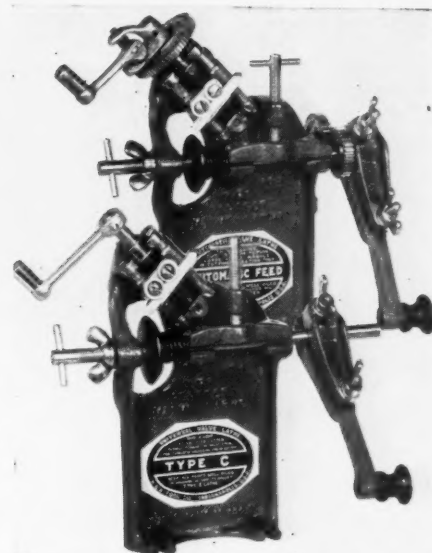
Milburn self-contained spraying unit

annular chamber surrounding the air nozzle. Small or large spray or a stream of air without paint may be obtained by turning the nozzle.

The Egyptian Transportation Company which operates a large fleet of motor bus lines in southern Illinois, has asked the Illinois Commerce Commission for authority to issue gold mortgage bonds to the amount of \$200,000 to enable the purchase of additional equipment.

## H & B Valve Tools

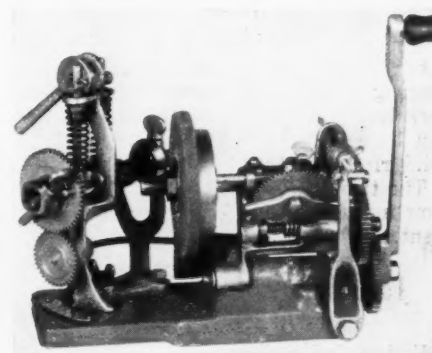
Two types of tools for refacing valves are manufactured by the H. & B. Tool Co., Indianapolis, Ind. The valve head grinder is hand operated and is equipped



H & B valve head hand grinder

with an automatic cross feed. The grinding feed is adjustable on this model, which lists at \$25.65.

The automatic cross feed feature is incorporated in a valve lathe, shown in



Valve lathe with cross feed feature

the illustration. The Universal type lathe has a cross feed, operated by hand. Valves are turned by hand in either lathe.

## Certificate Holders Listed by Malleable Castings Association

Fifty-six firms are listed as certificate holders as manufacturers of malleable castings for the quarter ending June 30th by the American Malleable Castings Association.

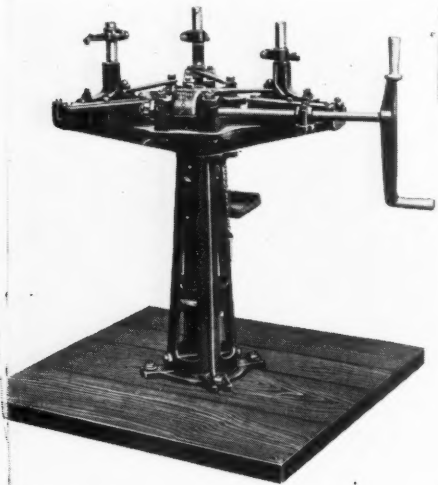
Certificates are awarded each quarter to plants which send test bars from each day's production to the laboratory of the association and whose foundry practice conforms to the association's requirements.

Tensile strength of 50,000 lb. and an elongation of 10% in 2 inches and a torsion test of 1080° are general requirements to be met by product of certificate holders.

### Manley Tire Changer

Double jaws which clamp each side of the rim and a rack and pinion attachment for removing tires from solid rims are features of the Manley tire changer made by the Manley Mfg. Co., York, Pa.

The double jaws, of which there are three, have uniform radial motion from the center of the machine. Worm thrust



Removes tires from solid rims

is taken by double ball bearings and a link motion moves the jaws 6 in. with 15 turns of the handle.

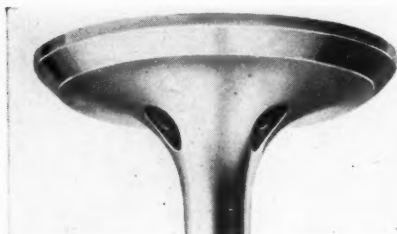
The solid rim attachment consists of a heavy steel post which screws into the bearing post of the worm wheel and a rack and pinion press. Heavy pressure can be easily applied to tires rusted to solid rims by the pinion press.

The tire changer lists at \$50 for split rims and \$65 with the solid rim attachment.

### James Valve Has "Self-Cooling" Head

Embodying a new principle of construction and formed of a special alloy metal new to the automotive industry and known as Ni-chro-loy, the "self-cooling" valves announced by the James Motor Valve Co., Detroit, Mich., are claimed to be immune to excessive heat, warping or pitting and to withstand the most severe stresses encountered for long periods in high speed and heavy duty engines. The new valve is especially recommended by the manufacturers for truck and bus service.

Quicker dissipation of heat at the



Showing two of the three vents to the hollow chamber

valve head is secured through a hollow chamber cast inside the valve head with three vent holes opening into the radius below the head. These three vent holes permit of circulation of air (hot or otherwise) through the interior of the valve head. It is recommended that the "self-cooling" type of valve be employed for both inlet and exhaust valves.

As the exhaust valves open and the gases rush by, a suction is created below the head and this action draws the excessive heat in the hollow chamber away from the head thereby cooling it. Even though the gases are of an unusually high temperature, the fact that they are forced to circulate through the head causes a cooling action. While this design allows of maximum strength, the



Cross section showing chamber and vents

hollow construction reduces the mass of metal around the head and considerably reduces the expansion of the valve stem.

The manufacturers claim the new valves accumulate less carbon due to lower temperature at which they operate, are lighter in weight, more silent in operation due to the closer clearance obtainable, metal is non-magnetic, immune from oxidation, and that the valves will not scale, warp or melt below 3,000 deg. Fahr.

Experimental work on the "self-cooling" valves was commenced five years ago by George D. Grant, former president of the Grant Motor Co. who is now connected with the James Motor Valve Co. through the merging of the Gas Engine Valve Co. with the James Co. During these five years tests have been made in which over 2,000 different cars have been employed.

### Cylinder Head Lifting Tool

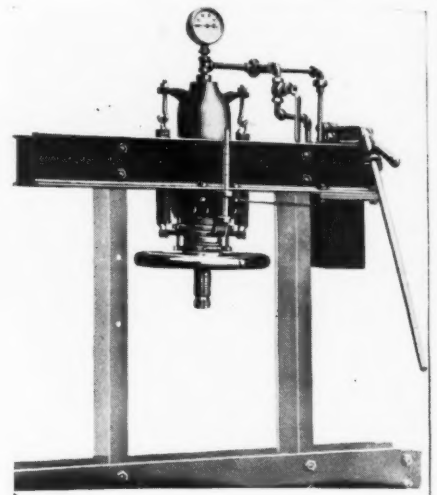
A new type of tool for lifting cylinder heads by means of attachments in the spark plug holes has been placed on the market by Walden-Worcester. Metric,  $\frac{1}{2}$ " pipe and  $\frac{7}{8}$ -18, threads are cut on the body of the tool. A ratchet action permits the handle to be turned in any position. Two of the tools are used at a time for lifting cylinder heads. One size of tool fits all spark plug holes.



Spark plug hole head lifting tool

### Manley Hydraulic Conversion Unit

The Manley Mfg. Co., York, Pa., are building a hydraulic unit which can be attached to any No. 1 or No. 21 Manley press to convert it to a hydraulic press. The conversion unit can be applied without drilling holes or other machine work. The old channels and screw assembly are



Unit for converting presses into hydraulic presses

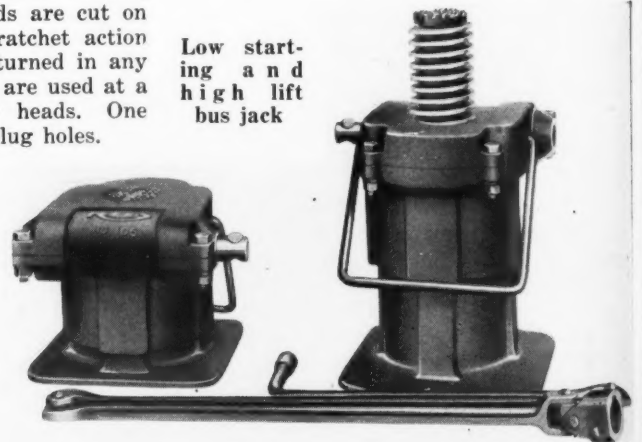
removed and the new channels and hydraulic unit bolted in place.

The screw is brought to position by means of a handwheel and pressure is then applied by the pump. An instantaneous release is obtained by opening a valve. A vertical scale at the front of the ram is used as a depth gage.

### Rees Jack for Buses

Requirement of a low starting point and a high lift have been achieved in the Rees Bus jack, model 105, made by the Rees Mfg. Co., 7501 Thomas Blvd., Pittsburgh, Pa. The jack is only five inches high and lifts  $5\frac{1}{2}$  in. to a maximum of  $10\frac{1}{2}$  in., with a lifting capacity of 5 tons. This jack is designed to be carried in the bus for tire changes on the road and not for garage work. The new jack weighs 23 lb. A six-foot handle is supplied and extra sections, three feet long, can be purchased.

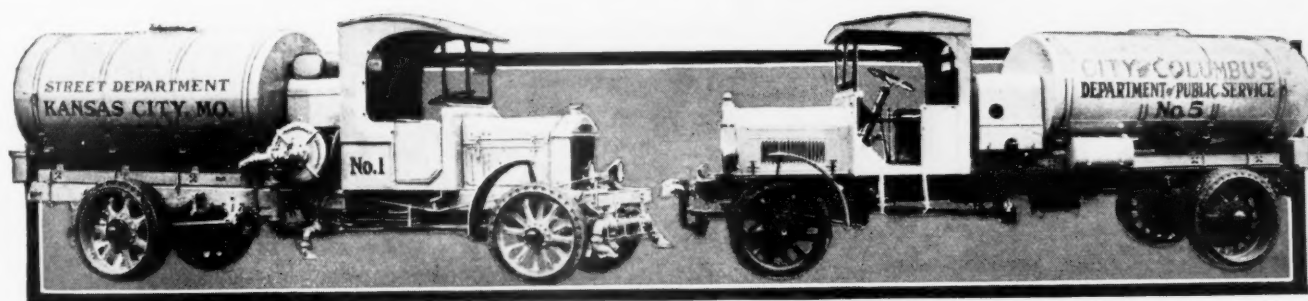
Low starting and high lift bus jack







## Rolled Steel Truck Wheels for Service in *every* Service



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# BETHLEHEM

## C. C. J. SHOP IDEAS

*THIS page is primarily designed to help service station repairmen in exacting economies in time, labor and money. Salesmen, however, can also profit by scanning over these practical*

*hints. The average buyer of today is more conversant with the important details of truck operation and maintenance than ever before. A money-saving idea will often result in a sale.*

Commercial Car Journal will pay as much as five dollars for each new idea which it accepts. Simply tell us exactly how it is done and send a rough pencil sketch showing clearly the method employed or the device used.

### No. 82. Oil Can Shelf

A method of keeping track of oil cans containing engine oil, kerosene, gasoline, penetrating oil, etc., is shown in the illustration. Each can is numbered and contents are shown by lettering on the side. The shelf is provided with compartments, one for each can, numbered to correspond. Beneath the shelf a board is mounted and under each compartment, sets of holes,  $\frac{1}{4}$  in. diameter and about 1 in. deep are drilled, with numbers equal to the number of mechanics in the shop. A pin fastened to the board by a string is provided for each set of holes. The system functions as follows: Mechanic No. 1 when removing can from third compartment inserts the pin in hole No. 1 under that compartment. Anyone else seeking that particular can, later, can determine which mechanic is using it.—E. J. Milo, Dover, N. J.

### No. 83. Clips for License Plates

Battery test clips furnish a satisfactory means of attaching license plates, temporarily, to trucks in transit or on demonstration. The clips are fastened to the plates by bolts or rivets. The jaws will hold on round rods or flat license brackets.—J. C.

### No. 84. Lifting Hook

An S-hook made of quarter inch soft steel, as illustrated, will lighten the labor of installing a Ford transmission assembly on the crankshaft. One eye of the hook is made to fit the magnet support screw and the other the hook on block or hoist.—Ellwood L. Sheip, Oaklyn, N. J.

### No. 85. Battery Tool Kit

The battery tool kit illustrated was made from a discarded three-cell battery. The center cell is left intact, the two end cells removed and the case sawed on either end as shown. The handle is made of a piece of garden hose, which should be long enough to clear the hydrometer bulb. Distilled water is kept in the center cell and tools and parts carried in the end compartments.—Fred Shaninger, Peru, Ind.

### No. 87. Bushing Radiator Hose

Inlet and outlet pipes of service radiators, which do not fit the hose on the engine, can be made to fit by "bushing" with another size of hose, as shown in our drawing. This method is much better than the common one of wrapping the pipe with tape.—H. W. C.

### No. 86. Straightening Ford Axle Shaft

A tool for straightening Ford rear axle shafts without removing from the car is shown. A Ford rear wheel hub is forced in the end of a drive-shaft housing and brazed. In use the hub section is pushed over the taper of the axle to be straightened and pressure applied on the end of the housing.—S. J. Wilhelm, Cincinnati, Ohio.

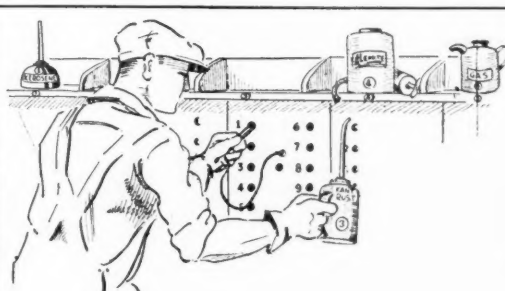
## Favors Bus But Not Truck Regulation

(Continued from page 8)

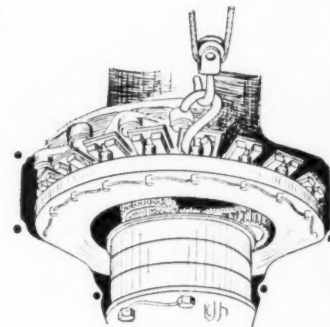
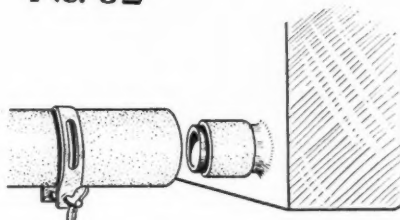
Murphy Transfer & Storage Co., stated that "the railroads were over-regulated now, and he could see no reason why burdensome regulations should be saddled upon the motor transportation industry at this time or any other time."

Perry Moore, attorney for 19 common carrier operators, using the Minneapolis and St. Paul Truck Terminals, announced that none of his clients would make statements. This being one of the largest group of operators in this section of the country, this move came as somewhat of a surprise. Instead he filed answers to the Commission's questionnaires.

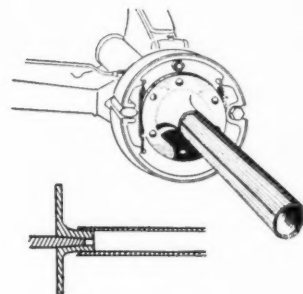
A summary of the hearings thus far indicate that the testimony is most in favor of bus regulation, but absolutely against truck regulation. What the rest of the hearings produce remains to be seen.



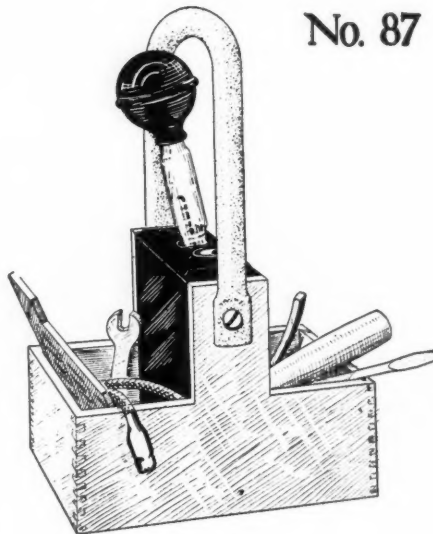
No. 82



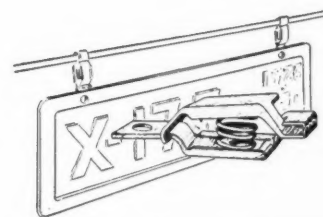
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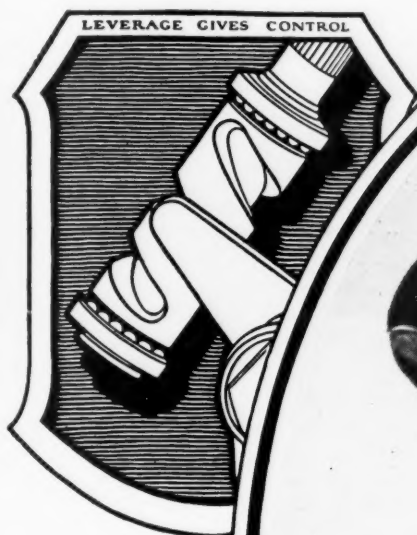
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## THE SMILE THAT ROSS MADE

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**CAM and LEVER**  **STEERING GEARS**

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### HB Battery Tester

All three cells of a storage battery can be tested at once by means of the HB high rate battery tester produced by Hobart Brothers Co., Troy, O. A carbon pile rheostat, with ammeter calibrated 300-0-300 and three voltmeters calibrated 3-0-3, make it possible to test battery cells under discharge conditions such as



Three cell battery tester

exist when the battery is in actual use, it is claimed. A supplementary jack, which eliminates the rheostat from the circuit is used for measuring the amount of current used by the starting motor. The case is made of aluminum with a Bakelite instrument board and a carrying handle is provided. Weight 12 lb., price \$48.

### Oil Reclaiming Device Uses Double Filter

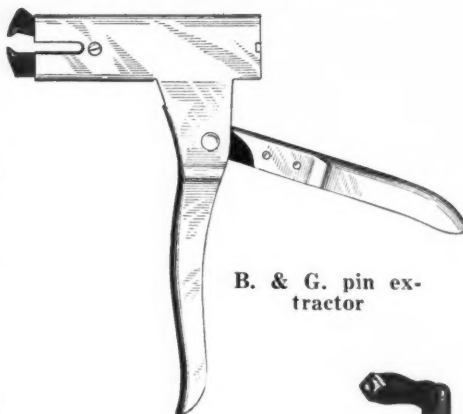
A device for reclaiming crankcase oil known as the Wiederhold Velvet Oil Klarifyor has been placed on the market by the Wiederhold Company, 3917 Bellevue Ave., Detroit. Reclaiming is accomplished by separating water and sludge by gravity in a tank, filtering through a medium of high porosity, heating by electric resistance which vaporizes the lighter non-lubricating components and diluents which are afterward condensed and drawn off separately, and a second filtering through a closely packed medium impregnated with a clarifying compound.

The reclaimer has a capacity of 2.5 gallons of reclaimed oil per hour, and the cost of the process is said to aver-

age 8.5 cents per gallon. A given quantity of crankcase drainings yields 75 per cent of that amount of reclaimed oil, the viscosity of which is 300 or over. In addition, a light oil is recovered which may be used either as fuel or as a lubricant for typewriters, fire-arms, etc. Approximately one gallon of this light distillate is recovered from 20 gallons of crankcase oil.

### Cotter Pin Super-Puller

A compact but powerful cotter pin puller is made by Burke & Gantz, Madison Terminal Bldg., Chicago. When pressure is applied to the handle two jaws are forced into the head of the cotter and additional movement of the handle withdraws the pin. The price is \$2.50.



B. & G. pin extractor

### Mossberg Wrench Set No. 82

The Mossberg No. 82 wrench set includes three spark plug sockets and 18 chrome molybdenum steel sockets with several types of handles. Sockets range from 7/16 to 1 in. hexagon and 3/8 in. to 5/8 in. square.

The set, complete, is contained in an enamel steel Kennedy kit. Price is \$23. Manufactured by Frank Mossberg Corp., Attleboro, Mass.

### Thermoid All Weather Brake Lining

Twill weave asbestos cloth is used in the new brake lining manufactured by the Thermoid Rubber Co., Trenton, N. J. In this lining the cross ridges of the asbestos pass diagonally across the face of the lining and the composition of the grapnel treatment has also been changed, it is stated. This produces a dry coefficient of friction of .5 and under operating condition the expansion due to moisture absorption is said to be .001 in. The new lining is being sold in 50 and 100 ft. rolls.

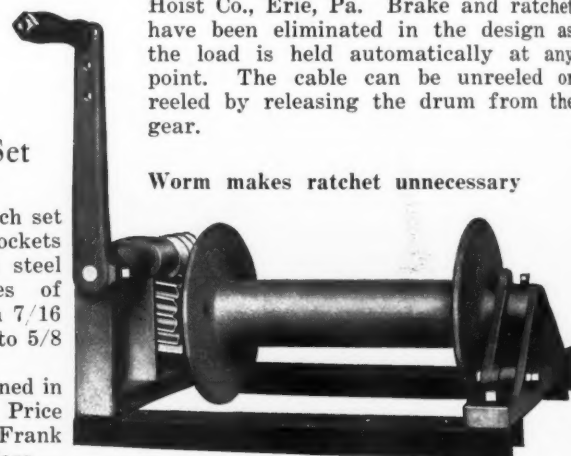
### Petry Bus Heating System

A booklet describing the Petry system of heating buses has been issued by the makers, N. A. Petry Co., Inc., Philadelphia. Details of construction of the Petry heater valve, controlling the amount of exhaust gas entering the system, and the various types of fittings, tubing and clothing guards are described. A data sheet is enclosed with the booklet for the convenience of owners who may wish quotation on the cost of installation of a bus heating system.

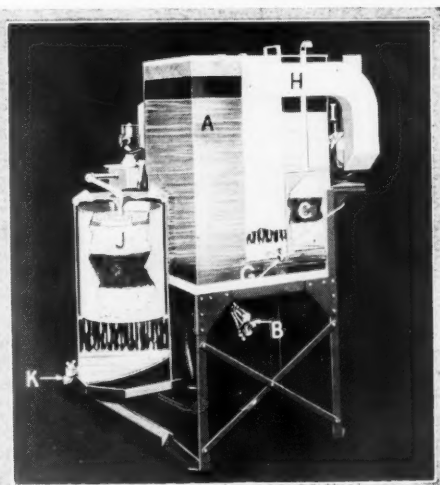
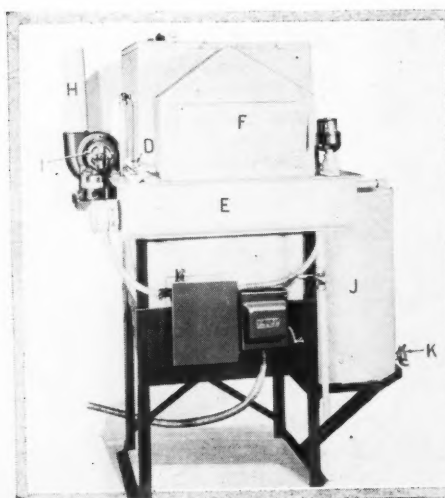
### Erie Hand Winch

A hand winch using the worm drive principle is being marketed by the Erie Hoist Co., Erie, Pa. Brake and ratchet have been eliminated in the design as the load is held automatically at any point. The cable can be unreel or reeled by releasing the drum from the gear.

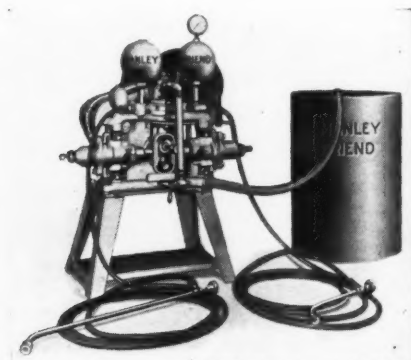
Worm makes ratchet unnecessary



The winch can be used in a wrecking car and by removing four bolts can be taken off the wrecker and used in the shop.



View of Velvet Oil Klarifyor. Right. The Klarifyor in phantom



The new Manley Friend car washer of the straight water type



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